JACOBSEN
A Textron Company

4139908

Parts & Maintenance Manual

GA-30 Aerator

88118 – GA-30 Aerator with Steering Wheel
88119 – GA-30 Aerator with Steering Handle

WARNING: If incorrectly used this machine can cause severe injury. Those who use and maintain this machine should be trained in its proper use, warned of its dangers and should read the entire manual before attempting to set up, operate, adjust or service the machine.

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GB

To Order Parts

1. Write your **full** name and **complete** address on the order.
2. Explain where and how to make shipment.
3. Give product number, name and serial number that is stamped on the name plate or serial plate of your product.
4. Order by the quantity desired, the part number, paint code, and description of the part as given in the parts list.
5. Send or bring the order to an authorized Jacobsen Dealer.
6. Inspect all shipments on receipt. If any parts are damaged or missing, file a claim with the carrier before accepting.
7. Do not return material without a letter of explanation, listing the parts being returned. Transportation charges must be prepaid.

Use of other than Jacobsen authorized parts will void the warranty.

1 Safety
1.1 Operating Safety 4
1.2 Important Safety Notes 5
2 Specifications
2.1 Product Identification 6
2.2 Kohler CH 18 S Engine 6
2.3 aerator 6
2.4 Weights and Dimensions 7
2.5 Accessories & Support Literature 7
3 Set-Up
3.1 Set-Up 8
4 Adjustments
4.1 General 9
4.2 Drive Belt Adjustment 9
4.3 Brake Adjustment 9
4.4 Hydrostat Pedal and Linkage Adjustment 10
4.5 Steering Wheel Installation and Adjustment 10
4.6 Spacing Control Adjustment 11
4.7 Reversing Gearbox Proper Gear Backlash 11
4.8 Reversing Gear Box Adjustment 12
4.9 Torque Specification 13
5 Maintenance
5.1 General 14
5.2 Engine 14
5.3 Engine Oil 14
5.4 Fuel 15
5.5 Fuel System 15
5.6 Battery 15
5.7 Jump Starting 16
5.8 Charging Battery 16
5.9 Hydraulic Hoses 16
5.10 Hydraulic Oil and Filter 17
5.11 Electrical System 17
5.12 Muffler and Exhaust 18
5.13 Aerator Head 18
5.14 Sealed chain maintenance 18
5.15 Windrow Attachment (Accessory) 18
5.16 Motor Drive Sprocket 18
5.17 Tires 19
5.18 Wheel Mounting Procedure 19
5.19 Care and Cleaning 19
5.20 Storage 20
6 Troubleshooting
6.1 General Troubleshooting 21
6.2 Drive Belt (Breaking) 22
6.3 Leaving Cores in the Turf 22
6.4 Return Link Hitting Reversing Gear Box 23
6.5 Unit Will Not Move 24
6.6 System Noisy 24
6.7 Sluggish Acceleration or Deceleration 24
6.8 Hydraulic Oil Hot 24
6.9 Correction of Tufting Problem 25
6.10 Hole Spacing Inconsistent 25
6.11 Engine Will Not Start 25
6.12 Aerator Ram Timing for Reduced Tufting 25
6.13 Timing For Smoother Ride (Fairway Aeration) 26
6.14 Timing For Reduced Tufting (Green Aeration) 27
7 Maintenance & Lubrication Charts
7.1 General 28
7.2 Lubrication Chart 28
7.3 Maintenance Charts 29
8 Notes
9 Parts Catalog
9.1 Table Of Contents 31

This manual is designed for the Maintenance and Adjustment of this equipment.
Use the maintenance and adjustment instructions included in this manual and the operating instructions included in the **Safety and Operation Manual** to service the machine.

The **Safety and Operation Manual** must be kept in the pouch on the back of the seat at all times for reference by the operator.

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Litho in U.S.A. 11-2005

Suggested Stocking Guide

To Keep your Equipment fully operational and productive, maintain a stock of the more commonly used maintenance items. We have included part numbers for additional support materials and training aids. A more complete listing of accessories and attachments can be found in the Specifications Section.

Service Parts

Qty.	Part No.	Description	Qty.	Part No.	Description
	842502	Engine Oil Filter		522887	Drive Belt
	842509	Engine Air Filter		842517	Spark Plug
	842504	Engine Fuel Filter			
	522972	Hydraulic Oil Filter			
	842513	Air Filter Pre Cleaner			
	4139909	Safety and Operation Manual		4139908	Parts and Maintenance Manual

Paint Codes

A paint code suffix is required when ordering painted parts. The available paint codes for each part are listed in the Parts Catalog using the following format:

[**Part Number**].[**Paint Code**]

For example:

123456.7 represents part **123456** painted **Gloss Black**.

If more than one paint code is listed, choose the paint code that matches your machine.

Parts listed in the Parts Catalog without a paint code suffix do not need the suffix added to order parts.

The following is a list of Jacobsen Paint Code Suffixes

- .2 Green
- .6 Orange
- .7 Gloss Black
- .8 High Heat Flat Black
- .9 Flat Black
- .10 White
- .11 Non Skid Gray
- .20 Red

How To Use This Manual

Abbreviations

N/S - Not serviced seperately, can only be obtained by ordering main component or kit.
AR -Variable quantity or measurement is required to obtain correct adjustment.
Symbols such as ▲, next to the item number, indicate that a note exists which contain additional information important in ordering that part.

Indented Items

Bulleted items indicate component parts that are included as part of an assembly or another component. These parts can be ordered separetely or as part of the main component.

Item	Part No.	Qty	Description	Serial Numbers/Notes
▲ 1	123456	1	Mount, Valve	*Indicates a piece part*
2	789012	1	Valve, Lift	*Includes Items 2 and 3*
3	345678	1	• Handle	*Serviced part included with Item 2*
4	N/S	1	• Seal Kit	*Non serviced part included with Item 2*
5	901234.6	1	Screw, 1/4-20 x 2” Hex Head	*Indicates part 901234 painted Orange*
5	901234.2	1	Screw, 1/4-20 x 2” Hex Head	*Indicates part 901234 painted Green*

1 SAFETY

1.1 OPERATING SAFETY

⚠ WARNING

EQUIPMENT OPERATED IMPROPERLY OR BY UNTRAINED PERSONNEL CAN BE DANGEROUS. Familiarize yourself with the location and proper use of all controls. Inexperienced operator's should receive instruction from someone familiar with the equipment before being allowed to operate the machine.

1. Safety is dependent upon the awareness, concern and prudence of those who operate or service the equipment. Never allow minors to operate any equipment.
2. It is your responsibility to read this manual and all publications associated with this equipment (Safety and Operation Manual, engine manual, accessories and attachments). If the operator can not read English it is the owner's responsibility to explain the material contained in this manual to them.
3. Learn the proper use of the machine, the location and purpose of all the controls and gauges before you operate the equipment. Working with unfamiliar equipment can lead to accidents.
4. Never allow anyone to operate or service the machine or its attachments without proper training and instructions; or while under the influence of alcohol or drugs.
5. Wear all the necessary protective clothing and personal safety devices to protect your head, eyes, ears hands and feet. Operate the machine only in daylight or in good artificial light.
6. Inspect the area where the equipment will be used. Pick up all the debris you can find before operating. Beware of overhead obstructions (low tree limbs, electrical wires, etc.) and also underground obstacles (sprinklers, pipes, tree roots, etc.) Enter a new area cautiously. Stay alert for hidden hazards.
7. Never direct discharge of material toward bystanders, nor allow anyone near the machine while in operation. The owner/operator can prevent and is responsible for injuries inflicted to themselves, to bystanders and damage to property.
8. Never operate equipment that is not in perfect working order or is without decals, guards, shields, discharge deflectors or other protective devices securely fastened in place.
9. Never disconnect or bypass any switch.
10. Carbon monoxide in the exhaust fumes can be fatal when inhaled. Never operate the engine without proper ventilation.
11. Fuel is highly flammable, handle with care.
12. Keep the engine clean. Allow the engine to cool before storing and always remove the ignition key.
13. Disengage all drives and engage parking brake before starting the engine (motor). Start the engine only when sitting in operator's seat, never while standing beside the unit.
14. Equipment must comply with the latest federal, state, and local requirements when driven or transported on public roads.
15. Never use your hands to search for oil leaks. Hydraulic fluid under pressure can penetrate the skin and cause serious injury.
16. Operate the machine up and down the face of the slopes (vertically), not across the face (horizontally).
17. To prevent tipping or loss of control, do not start or stop suddenly; reduce speed when making sharp turns. Use caution when changing direction on slopes.
18. Keep legs, arms and body inside the seating compartment while the vehicle is in motion.

This machine is to be operated and maintained as specified in this manual and is intended for the professional maintenance of specialized turf grasses. It is not intended for use on rough terrain or long grasses.

1.2 IMPORTANT SAFETY NOTES

This safety alert symbol is used to alert you to potential hazards.

DANGER - Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

WARNING - Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

CAUTION - Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury and property damage. It may also be used to alert against unsafe practices.

For pictorial clarity, some illustrations in this manual may show shields, guards or plates open or removed. Under no circumstances should this equipment be operated without these devices securely fastened in place

WARNING

The interlock system on this aerator prevents the engine from starting unless the brake lever is engaged, aerator switch is off and traction pedal is in neutral. The system will stop the engine if the operator leaves the seat with the aerator head lowered, parking brake disengaged or traction pedal out of neutral.

NEVER operate Aerator unless the Interlock System is working

WARNING

1. Before leaving the operator's position for any reason:
   a. Return traction pedal to neutral
   b. Raise aerator head
   c. Engage parking brake.
   d. Stop engine.
2. Keep hands, feet, and clothing away from moving parts. Wait for all movement to stop before you clean, adjust or service the machine.
3. Keep the area of operation clear of all bystanders and pets.
4. Never carry passengers, unless a seat is provided for them.
5. Never operate aerating equipment without the discharge deflector securely fastened in place.

By following all instructions in this manual, you will prolong the life of your machine and maintain its maximum efficiency. Adjustments and maintenance should always be performed by a qualified technician.

If additional information or service is needed, contact your Authorized Jacobsen Dealer who is kept informed of the latest methods to service this equipment and can provide prompt and efficient service.

Use of other than original or authorized Jacobsen parts and accessories will void the warranty.

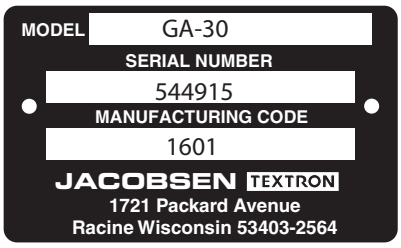
2 SPECIFICATIONS

2.1 PRODUCT IDENTIFICATION

88118..... GA-30 Aerator with Steering Wheel.
88119..... GA-30 Aerator with Steering Handle.

Serial Number ..... An identification plate, like the one shown, listing the serial number, is attached to the right side of the aerator head frame.

Always provide the serial number of the unit when ordering replacement parts or requesting service information.



Product	EEC Sound Power	Sound Pressure Level Operator Ear	Vibration M/S^2	
			Arms	Body
88118	<105 dba	90 dba	3.7	0.11
88119	<105 dba	90 dba	3.7	0.11

2.2 KOHLER CH 18 S ENGINE

Make..... Kohler
Model..... CH18S
Horsepower ..... 18 hp (13.4 kW) @3600 rpm

Note: *Actual sustained horsepower will likely be lower than listed in specifications due to operating limitations and environmental factors*

Displacement..... 38.1 cu. In. (624 cc)
Torque ..... 54 ft. lbs. (73 Nm) @ 2200 rpm
Fuel:
- Type..... Unleaded Gasoline
- Rating ..... 87 Octane Minimum
- Capacity..... 6.25 U.S. Gal. (23.8 liters)

High speed - rpm.....3150 no load
Low Idle - rpm.....1750 no load
Lubrication:
- Capacity.....2.1 qt (2 liters)
- Type.....SAE 10W30
- API Classification ....SG, SH, SJ

Air Filter.....Replaceable paper element with oiled pre-cleaner.
Alternator.....40 amp
Cooling System .....Air Cooled

2.3 AERATOR

Tires
- Front ..... 18-9.50 x 8 4 ply
- Rear..... 18-10.50 x 8 4 ply

Pressure: ..... 12 psi (83 kPa)
Battery:
- Type..... 12 Volt Lead/Acid
- Group..... 45 GMF

Parking Brake..... Mechanical front wheel disk

Speed:
- Aeration (2 WD).....up to 28,125 sq ft/hr

Hydraulic System:
Capacity .....8 U.S. gal. (30.28 liters) System
Fluid Type.....GreensCare 68
Return Filter.....Full Flow 10 micron
Steering .....Hydrostatic power steering
Tine Lift.....Hydraulic Double Acting Cylinders

2.4 WEIGHTS AND DIMENSIONS

Dimensions:	Inches	(m)
Length	77.6	(2)
Length - With Window Attachment	107.6	(2.7)
Height	53.3	(1.4)
Wheel Base	59.1	(1.5)
Width	60	(1.5)
Turning Radius	18	(0.5)

Weights:	Lbs.	(kg)
Working Weight Less Operator		
88119	1402	(636)
88118	1402	(636)

2.5 ACCESSORIES & SUPPORT LITERATURE

Contact your area Jacobsen Dealer for a complete listing of accessories and attachments.

⚠ CAUTION

Use of other than Jacobsen authorized parts and accessories may cause personal injury or damage to the equipment and will void the warranty

Accessories

Orange Paint (16 oz. spray) 2700345
Orange Paint (1 qt. can) 2700351
Windrow 4116980

Support Literature

Safety & Operation Manual 4138809
Parts & Maintenance Manual 4138808
Video, operator 4128273

3 SET-UP

3.1 SET-UP

WARNING

To prevent possible injury to yourself or others, stay clear when cutting banding. Banding is under tension and can snap back when cut.

DO NOT operate this equipment until you have read the controls and operating sections thoroughly!

Loose parts kit includes additional tines.

1. Remove carton from unit.
2. Lift seat assembly (lever located below seat on right–front side, Figure 3A), cut ties from wooden block located on hydraulic cylinder and remove block.

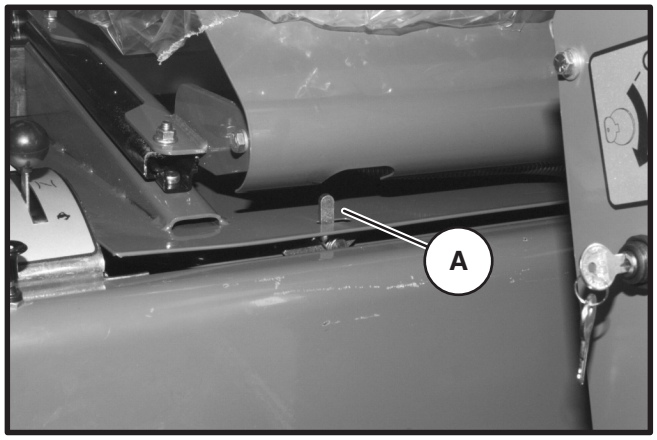


Figure 3A

A. Cover latch

3. Insert three (3) tines per holder and tighten screws securely. **BE SURE** tines are tight against shoulder of tine holder.
4. Attach tine holders to tine rams and secure with two (2) flangelock nuts (See Figure 3B).
5. Remove screw from beneath aerator lift pedal.

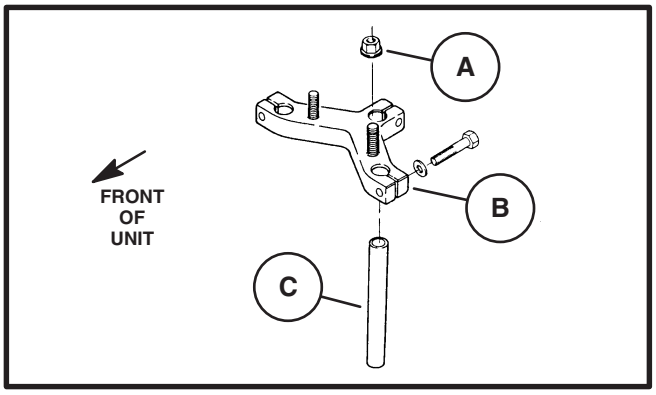


Figure 3B

A. Flangelock Nut

B. Tine Holder

C. Tine

Note: *To prevent corrosion on gauge stem, replace fuel tank cap with gauge cap after two (2) full tanks of fuel have been run through the system.*

On models shipped with a plastic bag over gauge stem, fill fuel tank and remove bag before installing into fuel tank.

4.1 GENERAL

⚠ WARNING

To prevent injury, lower implements to the ground, disengage all drives, engage parking brake, stop engine and remove key from ignition switch before making any adjustments or performing maintenance.

Make sure the aerator is parked on a solid and level surface. Never work on a aerator that is supported only by the jack. Always use jack stands.

If only the front or rear of the aerator is raised, place chocks in front of and behind the wheels that are not raised.

1. Adjustments and maintenance should always be performed by a qualified technician. If proper adjustment cannot be made, contact an authorized Jacobsen Dealer.
2. Replace, do not adjust, worn or damaged components.
3. Long hair, jewelry or loose fitting clothing may get tangled in moving parts.

⚠ CAUTION

Be careful to prevent entrapment of the hands and fingers between moving and fixed components of the machine.

4. Do not change governor settings or overspeed the engine

4.2 DRIVE BELT ADJUSTMENT

Inspect and adjust new belt after first 50 hours of operation. Check and adjust annually thereafter.

1. Position the driven belt pulley (Part No. 522890) 1/8” - 3/16” (3.5 - 4.8 mm) away from the aerator frame.
2. Adjust the driver pulley (Part No. 521680) to align with the driven pulley within 1/16” (1.6 mm).
3. Adjust all belt guides to within 1/16” - 3/16” (1.6 - 3.5 mm) of gap from belt.
4. The belt stop (Part No. 547547) should be positioned below the belt.
5. A 1/8” - 3/16” (3.5 - 4.8 mm) gap must be left between the threaded ends of the belt guide and all return linkage.
6. Check to make sure the head mechanism fully disengages when head is in the raised position.

4.3 BRAKE ADJUSTMENT

1. Position the brake cam (Part No. 540039) so the brake buttons (Part No. 523203) are located in the bottom of the cam groove surface.
2. Locate the 3/8 - 16 centerlock nut (Part No. 800292) at the caliper pivot point. This nut is used to retain the calipers but must have clearance to allow pivoting action. Adjust the nut to 1/16 turn short of being tight.
3. Adjust the brake rod (Part No. 523202) and clevis (Part No. 827498) with the return spring (Part No. 817613) installed, to the correct length which will allow the bellcrank to be connected to the rotary cam.
4. Adjust the caliper by using the two (2) 1/2 - 13 nuts (Part No. 548051) until the calipers allow the 38 tooth sprocket (Part No. 522856) on the differential to rotate freely.
5. Adjust the calipers to allow 1/2” ± 1/8” (13 mm ± 3.5 mm) of brake pedal travel before the calipers engage firmly against the sprocket. Secure the two (2) 1/2 - 13 nuts to maintain the adjustment.
6. Check to make sure brakes work properly when applied.

4 ADJUSTMENTS

4.4 HYDROSTAT PEDAL AND LINKAGE ADJUSTMENT

1. Locate the hydrostat pump arm (Part No. 547680) at the rear of the machine and against the internal stop of the pump.
2. Move the pump arm off the internal pump stop with the pump arm stop bracket (Part No. 523410) approximately 1/32" (.8 mm).
3. Connect the control link (Part No. 523419) with the bellcrank (Part No. 547738) in the "Neutral" position.
4. Adjust the rod (Part No. 523419) so there is no hydraulic fluid output to the drive motor.
5. Install the control rod (Part No. 523115) with the foot pedal (Part No. 547614) in a "Forward" position or a maximum of 1/16" (1.6 mm) off the floor pan. The hydrostat pump arm (Part No. 547680) should be against the stop bracket (Part No. 523410), toward the rear of the machine.

4.5 STEERING WHEEL INSTALLATION AND ADJUSTMENT

For model 88118

1. Install fork spindle bearings and fork.
2. Assemble steering box supports. Mounting bolts should be finger tight and still allow movement of brackets.
3. Install key (Part No. 551041) in spindle.
4. Assemble lower housing assembly (Part No. 880552) and idler adjustment bolt (Part No. 816452). Place one (1) spacing washer (Part No. 816446) over hole on inside of casting and insert adjustment bolt. Place one (1) locating washer (Part No. 816449) over adjusting bolt with knurled side against outside of lower casting. Tighten nut (Part No. 800612) to finger tight.
5. Attach above assembly to steering box supports. Tighten mounting bolts to finger tight.
6. Place liberal amount of lubricant in recess on idler adjusting bolt and place cluster gear idler (Part No. 830168) over adjusting bolt.
7. Install steering gear on spindle (Part No. 830167). Apply Loctite #271 sealant to the spindle shaft threads before installing fork spindle nut (Part No. 825672). Hold fork, tighten fork spindle nut (Part No. 825672) tight and torque to 60 - 70 ft.-lbs. (81 - 95 N-m). Apply a liberal amount of lithium base grease lubricant to gear teeth and all bearing surfaces.
8. Block up wheel and adjust height of the lower housing so that when fork is held against thrust washer there is 1/64" - 1/16" (.4 mm - 1.6 mm) clearance between top of cluster gear teeth and bottom of steering gear teeth. Tighten three (3) support mounting bolts. Move entire wheel assembly up and down to ensure that there is not more than 1/16" (1.6 mm) end play or spindle will interfere with steering case.
9. Place one (1) spacing washer (Part No. 816446) over idler adjustment bolt. Assemble upper housing assembly to lower housing assembly. Place one (1) locating washer (Part No. 816449) over adjusting bolt with knurled side against casting and tighten nut (Part No. 800612) to finger tight. Tighten the housing attaching bolts and torque equally 3 - 4 ft.-lbs. (4 - 5 N-m).
10. Rotate front fork side to side to check gear alignment. If a smooth, free turning fork is not achieved, loosen top three (3) mounting bolts of support brackets and adjust housing assembly until a smooth turning fork is acquired. Tighten bolts and recheck turn of fork.
11. Further adjustment is allowed by loosening bottom two (2) mounting bolts; however, when this adjustment is required, it may be necessary to remove top housing assembly and reset the 1/64" - 1/16" max. (.4 - 1.6 mm max.) dimension between the idler gear and driven gear.
12. After completion of the above steps, torque the following equally in sequence:
    a. 1/4 - 20 assembly bolts 8 - 10 ft.-lbs. (11 - 18 N-m)
    b. 3/8 - 18 upper three (3) and lower two (2) mounting bolts 20 - 25 ft.-lbs. (27 - 34 N-m).
13. To adjust backlash or hold front wheel. Check to see that the fork does not turn. Loosen top and bottom idler adjusting nuts and turn the steering wheel counterclockwise and hold with light pressure. Snug the bottom idler adjusting nut and then the top adjusting nut.

Note: *Care must be taken to prevent cocking the idler shaft.*

14. With slight pressure on the steering wheel in counterclockwise direction, tighten bottom nut to 40 - 50 ft.-lbs. (54 - 68 N-m). Check backlash for a maximum of 1/4" (6.4 mm) travel of the steering wheel, then tighten top adjusting nut to 40 - 50 ft.-

lbs. (54 - 68 N-m). Check operation of the steering for free operation. A slight amount of roughness is permitted after the front wheel has turned either direction 15°. It is better to have the allowable roughness than the maximum permitted backlash. If it is necessary to readjust the idler shaft, the locating washers (Part No. 816449) must be rotated to prevent the serrations from falling into the same marks.

4.6 SPACING CONTROL ADJUSTMENT

Note: *Hole spacing on the GA-30 is controlled by the forward speed of the unit. The faster the unit travels, the more space between the holes.*

1. Make a test run with the spacing control knob set at 2 1/2" (64 mm), and direction control pedal fully depressed.
2. Measure the distance (center to center) between the holes. If the distance is more or less than 2 1/2" (64 mm) adjust as follows:

   Set the spacing control lever at the 2 1/2" (64 mm) mark.
3. Jack rear wheels off the ground. Support unit with jack stands.
4. Remove bolt from chain drive sprocket.
5. Lift seat and remove internal rubber cover.
6. Remove side panel and muffler cover, remove drive belt.
7. With the aerator head fully lowered, and the throttle at full speed (3600 ± 75 R.P.M.), place a slow speed tachometer against the threaded center of the hydraulic motor.
8. Adjust the spacing control rod (Part No. 524160) until the hydraulic motor speed stabilizes at 28 ± 1 R.P.M. Use the adjusting screw (Part No. 524453) to set position by screwing forward to decrease hole spacing (lengthening rod). Screw backward (shorten rod) to increase hole spacing. Lock the two (2) nuts (Part No. 306320) and override spring (Part No. 524083) into position so that the spring may compress 1/8" (3.2 mm) after adjustment is complete. Refer to Figure 4A.
9. Replace drive belt and panels.
10. Replace internal rubber cover and chain drive sprocket bolt.

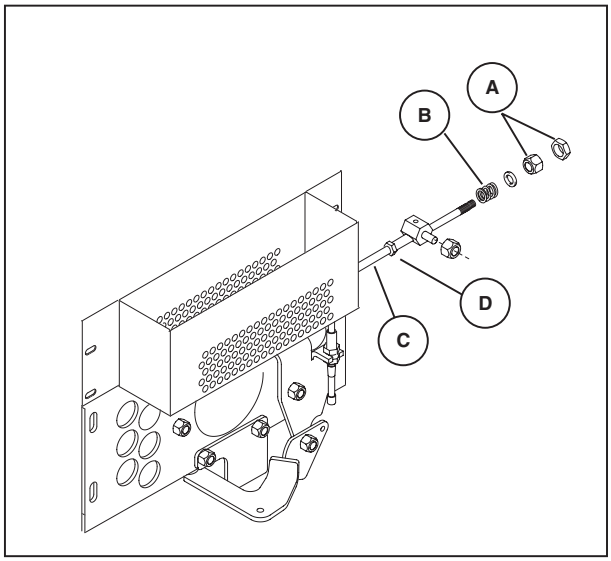


Figure 4A

A. Nuts

B. Override spring

C. Spacing Control rod

D. Adjusting screw

4.7 REVERSING GEARBOX PROPER GEAR BACKLASH

Note: *The gear lash can be inspected while the reversing gearbox is still on the unit. The gear backlash should be zero.*

1. Locate 2 tine rams connected through linkage to the same reversing gearbox. Grasp both of the tine rams low near the tine holder mounting. Push one of the tine rams in until it stops and hold it there. Slowly move the other tine ram in and out, look for independent movement of the tine ram and listen for a knocking noise coming from the gears in the reversing gearbox.
2. A correctly adjusted reversing gearbox should feel solid and the tine rams should not move independently from one another. There should not be any knocking noises coming from the gears in the reversing gearbox. If the tine ram does move independently from the other tine ram, the linkage from the tine ram to the reversing gearbox should be inspected for damage or wear. If no wear or damage is found in the linkage, then the reversing gearbox should be adjusted for zero gear backlash.

4.8 REVERSING GEAR BOX ADJUSTMENT

Note: *The reversing box is heavy **BE SURE** it is not dropped while being removed from the GA-30.*

1. Unscrew plugs from gearbox halves and turn gearbox upside down in a drain pan to drain gear oil before disassembly. Later units are filled with grease.
2. Once gearbox has drained, loosen and remove four (4) 3/8” screws, lockwashers and locknuts securing gearbox halves.
3. Separate gearbox halves and remove gasket. Clean and rinse out the grease from the gearbox halves.
4. Prepare case half surfaces for installation of new gasket.
5. Using a new gasket, place both halves upside down on a flat surface and carefully engage the gears so both vertical links are pointing straight up and are facing forward when the gearbox halves are placed together.
6. Loosely bolt the gearbox halves together using the original hardware, making sure the lockwashers are against the screw heads.
7. With the gearbox still upside down on a flat surface, laterally slide the halves together to get a zero backlash on the gears (when both links are pointing upward). Tighten the four (4) 3/8 - 24 x 1 1/4” screws to secure the gearbox halves together and torque to 35 ± 5 ft.-lbs. (47 ± 7 N-m). Refer to Figure 4B.
8. Fill gearbox with grease by pumping into one gearbox plug hole and filling until it comes out the other hole.

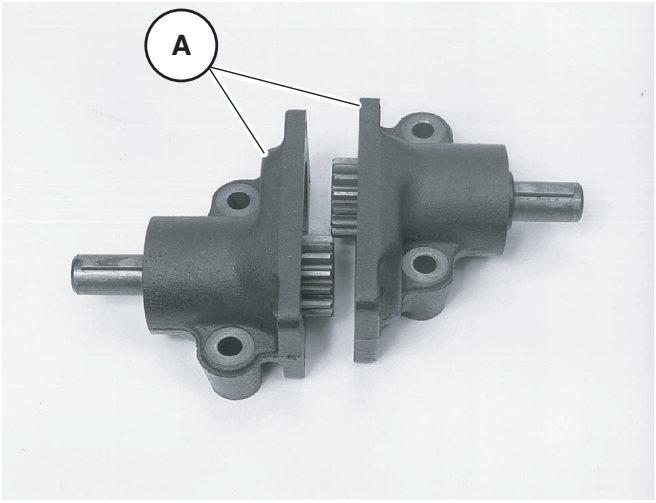


Figure 4B

A. Gear box halves

4.9 TORQUE SPECIFICATION

CAUTION

All torque values included in these charts are approximate and are for reference only. Use of these torque values is at your sole risk. Jacobsen is not responsible for any loss, claim, or damage arising from the use of these charts. **Extreme caution should always be used when using any torque value.**

Jacobsen uses Grade 5 bolts as standard, unless otherwise noted.

AMERICAN NATIONAL STANDARD FASTENERS			
SIZE	UNITS	GRADE 5	GRADE 8
#6-32	in-lbs (Nm)	20 (2.3)	–
#8-32	in-lbs (Nm)	24 (2.7)	30 (3.4)
#10-24	in-lbs (Nm)	35 (4.0)	45 (5.1)
#10-32	in-lbs (Nm)	40 (4.5)	50 (5.7)
#12-24	in-lbs (Nm)	50 (5.7)	65 (7.3)
1/4-20	in-lbs (Nm)	95 (10.7)	125 (14.1)
1/4-28	in-lbs (Nm)	95 (10.7)	150 (17.0)
5/16-18	in-lbs (Nm)	200 (22.6)	270 (30.5)
5/16-24	in-lbs (Nm)	240 (27.1)	300 (33.9)
3/8-16	ft-lbs (Nm)	30 (40.7)	40 (54.2)
3/8-24	ft-lbs (Nm)	35 (47.5)	45 (61.0)

AMERICAN NATIONAL STANDARD FASTENERS			
SIZE	UNITS	GRADE 5	GRADE 8
7/16-14	ft-lbs (Nm)	50 (67.8)	65 (88.1)
7/16-20	ft-lbs (Nm)	55 (74.6)	70 (94.9)
1/2-13	ft-lbs (Nm)	75 (101.7)	100 (135.6)
1/2-20	ft-lbs (Nm)	85 (115.3)	110 (149.2)
9/16-12	ft-lbs (Nm)	105 (142.4)	135 (183.1)
9/16-18	ft-lbs (Nm)	115 (155.9)	150 (203.4)
5/8-11	ft-lbs (Nm)	150 (203.4)	195 (264.4)
5/8-18	ft-lbs (Nm)	160 (217.0)	210 (284.8)
3/4-10	ft-lbs (Nm)	170 (230.5)	220 (298.3)
3/4-16	ft-lbs (Nm)	175 (237.3)	225 (305.1)
7/8-14	ft-lbs (Nm)	300 (406.8)	400 (542.4)

METRIC FASTENERS							
SIZE	UNITS	4.8	5.8	8.8	10.9	12.9	Non Critical Fasteners into Aluminum
M4	Nm (in-lbs)	1.2 (11)	1.7 (15)	2.9 (26)	4.1 (36)	5.0 (44)	2.0 (18)
M5	Nm (in-lbs)	2.5 (22)	3.2 (28)	5.8 (51)	8.1 (72)	9.7 (86)	4.0 (35)
M6	Nm (in-lbs)	4.3 (38)	5.7 (50)	9.9 (88)	14.0 (124)	16.5 (146)	6.8 (60)
M8	Nm (in-lbs)	10.5 (93)	13.6 (120)	24.4 (216)	33.9 (300)	40.7 (360)	17.0 (150)
M10	Nm (ft-lbs)	21.7 (16)	27.1 (20)	47.5 (35)	66.4 (49)	81.4 (60)	33.9 (25)
M12	Nm (ft-lbs)	36.6 (27)	47.5 (35)	82.7 (61)	116.6 (86)	139.7 (103)	61.0 (45)
M14	Nm (ft-lbs)	58.3 (43)	76.4 (55)	131.5 (97)	184.4 (136)	219.7 (162)	94.9 (70)

5 MAINTENANCE

5.1 GENERAL

⚠ WARNING

Before you clean, adjust, or repair this equipment, disengage all drives, lower implements to the ground, stop engine and remove key from ignition switch to prevent injuries

1. Adjustment and maintenance should always be performed by a qualified technician. If proper adjustments cannot be made, contact an Authorized Jacobsen Dealer.
2. Inspect the equipment on a regular basis, establish a maintenance schedule and keep detailed records.
   a. Keep the equipment clean.
   b. Keep all moving parts properly adjusted and lubricated.
   c. Replace worn or damaged parts before operating the machine.
   d. Keep all fluids at their proper levels.
   e. Keep shields in place and all hardware securely fastened.
   f. Keep tires properly inflated.
3. Long hair, jewelry or loose fitting clothing may get tangled in moving parts.
4. Use the illustrations in the Parts Catalog as reference for the disassembly and reassembly of components.
5. Recycle or dispose of all hazardous materials (batteries, fuel, lubricants, anti-freeze, etc.) according to local, state or federal regulations.

5.2 ENGINE

Important: A separate Engine Manual, prepared by the engine manufacturer, is supplied with this unit. Read the engine manual carefully until you are familiar with the operation and maintenance of the engine. Proper attention to the engine manufacturer's directions will assure maximum service life of the engine. To order replacement engine manuals contact the engine manufacturer.

The proper break-in of a new engine can make a considerable difference to the performance and life of the engine.

During the break-in period, Jacobsen recommends the following:

1. During the first 50 hours of operation, a new engine should be allowed to reach an operating temperature of at least 140°F (60°C) prior to operation at full load.
2. Check the engine oil level twice daily during the first 50 hours of operation. Higher than normal oil consumption is not uncommon during the initial break-in period.
3. Change engine oil and oil filter element after first 50 hours of operation.
4. Refer to Section 7.3 and Engine Manual for specific maintenance intervals.

5.3 ENGINE OIL

Check the engine oil at the start of each day, before starting the engine. If the oil level is low, remove oil filler cap and add oil as required.

Perform initial oil change after first 50 hours of operation and every 100 hours thereafter. See Engine Manual.

Use only engine oils with API classification SG, SH, or SJ.

5.4 FUEL

Handle fuel with care - it is highly flammable. Use an approved container, the spout must fit inside the fuel filler neck. Avoid using cans and funnels to transfer fuel.

⚠ WARNING

Never remove the fuel cap from the fuel tank, or add fuel, when the engine is running or while the engine is hot.

Do not smoke when handling fuel. Never fill or drain the fuel tank indoors.

Do not spill fuel and clean spilled fuel immediately.

Never handle or store fuel containers near an open flame or any device that may create sparks and ignite the fuel or fuel vapors.

Be sure to reinstall and tighten fuel cap securely.

- Fill the fuel tank to full mark on fuel gauge.
- Store fuel according to local, state or federal ordinances and recommendations from your fuel supplier.
- Never overfill or allow the tank to become empty.
- Check fuel lines and clamps every 50 hours. Replace fuel lines and clamps at the first sign of damage.
- Use clean, fresh, unleaded gasoline, 87 octane minimum. Refer to Engine Manual for additional information.

5.5 FUEL SYSTEM

Refer to Section 7.3 for specific maintenance intervals.

Before replacing any filter, thoroughly clean the filter housing and the area around the filter. Dirt must not be allowed to enter into fuel system.

5.6 BATTERY

Make absolutely certain the ignition switch is “Off” and the key has been removed before servicing the battery.

⚠ CAUTION

Always use insulated tools, wear protective glasses or goggles and protective clothing when working with batteries. You must read and obey all battery manufacturer’s instructions.

Tighten cables securely to battery terminals and apply a light coat of silicone dielectric grease to terminals and cable ends to prevent corrosion. Keep vent caps and terminal covers in place

Check the electrolyte level every 100 hours. Keep the cable ends, battery and battery posts clean.

Verify battery polarity before connecting or disconnecting the battery cables.

1. When installing the battery, always assemble the RED, positive (+) battery cable first and the ground, BLACK, negative (-) cable last.
2. When removing the battery, always remove the ground, BLACK, negative (-) cable first and the RED, positive (+) cable last.

Make sure battery is properly installed and secured to the battery tray

⚠ WARNING

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. **Wash your hands after handling.**

5 MAINTENANCE

5.7 JUMP STARTING

Before attempting to "jump start" the aerator, check the condition of the discharged battery, see Section 5.6

⚠ WARNING

Batteries generate explosive hydrogen gas. To reduce the chance of an explosion, avoid creating sparks near battery. Always connect the negative jumper cable to the frame of the aerator with the discharged battery, away from the battery.

When connecting jumper cables:

1. Stop the engine on the vehicle with a good battery.
2. Connect RED jumper cable to the positive (+) terminal on the good battery and to the positive (+) terminal on the "discharged" battery.
3. Connect the BLACK jumper cable from the negative (-) terminal on the good battery to the frame of the aerator with the discharged battery.

After cables have been connected, start the engine on the vehicle with the good battery then start the aerator.

5.8 CHARGING BATTERY

⚠ WARNING

Charge battery in a well ventilated area. Batteries generate explosive gases. To prevent an explosion, keep any device that may create sparks or flames away from the battery.

To prevent injury, stand away from battery when the charger is turned on. A damaged battery could explode.

1. Refer to Section 5.6. Read the Battery and Charger's manual for specific instructions.
2. Whenever possible, remove the battery from the aerator before charging. If battery is not sealed, check that the electrolyte covers the plates in all the cells.
3. Make sure the charger is "Off". Then connect the charger to the battery terminals as specified in the charger's manual.
4. Always turn the charger "Off" before disconnecting charger from the battery terminals.

5.9 HYDRAULIC HOSES

⚠ WARNING

To prevent serious injury from hot, high pressure oil, never use your hands to check for oil leaks, use paper or cardboard.

Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin. If fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

1. Always lower implements to ground, disengage all drives, engage parking brake, stop engine and remove key before inspecting or disconnecting hydraulic lines or hoses.
2. Check visible hoses and tubes daily. Look for wet hoses or oil spots. Replace worn or damaged hoses and tubes before operating the machine.
3. The replacement tube or hoses must be routed in the same path as the existing hose, do not move clamps, brackets and ties to a new location.
4. Thoroughly inspect all tubes, hoses and connections every 250 hours.

Important: The hydraulic system can be permanently damaged if the oil becomes contaminated. Before disconnecting any hydraulic component, clean the area around the fittings and the hose ends to keep impurities out of the system.

   a. Before disconnecting any hydraulic component, tag or mark the location of each hose then clean the area around the fittings.

   b. As you disconnect the component, be prepared to assemble plugs or caps to the hose ends and open ports. This will keep impurities out of the hydraulic system and also prevent oil spills.

   c. Make sure "O" rings are clean and hose fittings are properly seated before tightening.

d. Keep the hose from twisting. Twisted hoses can cause couplers to loosen as the hose flexes during operation resulting in oil leaks.

e. Kinked or twisted hoses can restrict the oil flow causing the system to malfunction and the oil to overheat and also lead to hose failure.

5.10 HYDRAULIC OIL AND FILTER

Refer to Section 7.3 for specific maintenance intervals.

Drain and replace the hydraulic oil after a major component failure, or if you notice the presence of water or foam in the oil, or a rancid odor (indicating excessive heat).

Always replace the hydraulic filter when changing oil.

To change hydraulic oil:

1. Clean the area around the oil cap to prevent impurities from entering and contaminating the system.
2. Remove drain plug from bottom of main tank.
3. After oil has drained install drain plug and fill with Jacobsen hydraulic oil.
4. Purge air from system.
   a. Operate all aerator functions for about 5 minutes to purge air out of the system and stabilize the oil level.
   b. Once the level has stabilized and the air is purged, fill tank to full mark on gauge

The hydraulic system is protected by one 10 micron filter. The filter is located under the frame near the hydraulic oil tank.

To replace hydraulic oil filter:

1. Remove the old filter.
2. Fill new filter with oil then install new filter. Hand tighten only.
3. Operate engine at idle speed with hydraulic system in neutral for five minutes.
4. Check hydraulic oil level and fill to full mark on gauge.

5.11 ELECTRICAL SYSTEM

⚠ CAUTION

Always turn the ignition switch off and remove the negative battery cable (Black) before inspecting or working on the electrical system.

General precautions that can be taken to reduce electrical problems are listed below.

1. Make certain all terminals and connections are clean and properly secured.
2. Check the Interlock System, and fuses regularly.
   a. If the Interlock System does not function properly and the problem cannot be corrected, contact an authorized Jacobsen Dealer.
3. Keep the wire harness and all individual wires away from moving parts to prevent damage.
4. Make sure the seat switch harness is connected to the main wire harness.
5. Check the battery and battery charging circuit.
6. Do not wash or pressure spray around electrical connections and components.

5 MAINTENANCE

5.12 MUFFLER AND EXHAUST

⚠ WARNING

Exhaust fumes contain carbon monoxide that is toxic and can be fatal when inhaled.

NEVER operate an engine without proper ventilation.

To protect from carbon monoxide poisoning, inspect the complete exhaust system regularly and always replace a defective muffler.

If you notice a change in the color or sound of the exhaust, stop the engine immediately. Identify the problem and have the system repaired.

Torque all exhaust manifold hardware evenly. Tighten or replace exhaust clamps.

5.13 AERATOR HEAD

⚠ WARNING

To prevent injury, the aerator head MUST be blocked up before working on heads or hydraulic system.

1. For tine sizes, part numbers and uses (see page 92).
2. Check the torque on the 523474 screws attaching the tine holders to the tine rams. The torque should be 70 ± 5 ft.-lbs. (95 ± 7 N-m).
3. Clean tine and core deflectors daily or as the soil builds up.

5.14 SEALED CHAIN MAINTENANCE

1. All aerating drive chains should be sprayed with Lubriplate # 13563 chain spray or an equivalent daily or each time aerator is refueled, to greatly extend chain life.
2. Oil the wheel drive chain every week with Lubriplate #13563 or an equivalent chain spray lubricant.

5.15 WINDROW ATTACHMENT (ACCESSORY)

1. If windrow attachment is missing some cores, check for proper assembly (see Figure 5A).

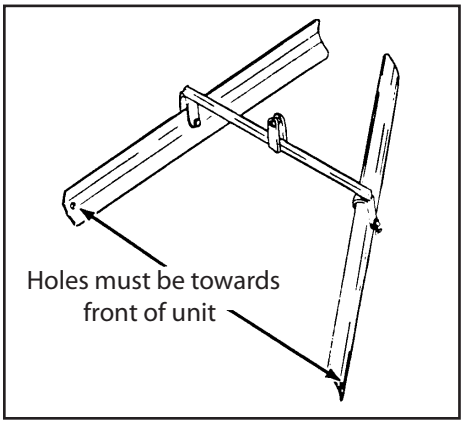


Figure 5A

5.16 MOTOR DRIVE SPROCKET

1. When replacing the screw that mounts the drive sprocket to the hydraulic drive motor, (Part No 400112) use Loctite 271 or an equivalent on the threads.

5.17 TIRES

1. Keep tires properly inflated to prolong tire life. Check inflation pressure while the tires are cool. Inspect tread wear.
2. Check the pressure with an accurate, low pressure tire gauge.
3. Keep tires inflated to:

   Front - 12 psi - (83 kPa)

   Rear - 12 psi - (83 kPa)

⚠ CAUTION

Unless you have the proper training, tools and experience, DO NOT attempt to mount a tire on a rim. Improper mounting can produce an explosion which may result in serious injury.

5.18 WHEEL MOUNTING PROCEDURE

1. Remove dirt, grease and oil from stud thread. do not lubricate threads.
2. Position wheel on hub and inspect to insure full contact between mounting surface of wheel and hub or brake drum.
3. Finger tighten all hardware, then torque hardware in criss-cross order; always tighten nuts in the top position.
4. Check and retorque daily until torque is maintained, 85-95 ft.-lbs. (115-129 N-m).

5.19 CARE AND CLEANING

Wash the unit and implements after each use. Keep the equipment clean.

Note: *Do not wash any portion of the equipment while it is hot. Do not use high pressure spray or steam. Use cold water and automotive cleaners.*

1. Use compressed air to clean engine and radiator fins. A special blow gun is available through your Jacobsen Dealer.
2. Use only fresh water for cleaning your equipment.

Note: *Use of salt water or affluent water has been known to encourage rust and corrosion of metal parts resulting in premature deterioration or failure. Damage of this nature is not covered by the factory warranty.*

3. Do not spray water directly at the instrument panel, ignition switch, controller or any other electrical components, or at bearing housings and seals.
4. Clean all plastic or rubber trim with a mild soap solution or use commercially available vinyl/rubber cleaners.

Repair damaged metal surfaces and use Jacobsen touch-up paint. Wax the equipment for maximum paint protection

⚠ WARNING

NEVER use your hands to clean the tines. Use a brush to remove debris from the tines. The tines are extremely sharp and can cause serious injuries.

⚠ CAUTION

Clean grass and debris from aerating units, drives, muffler and engine to prevent fires.

5.20 STORAGE

General

1. Wash the unit thoroughly and lubricate. Repair and paint damaged or exposed metal.
2. Inspect the unit, tighten all hardware, replace worn or damaged components.
3. Clean the tires thoroughly and store the unit so the load is off the tires. If unit is not on jack stands, check tires at regular intervals and reinflate as necessary.
4. Keep the machine and all its accessories clean, dry and protected from the elements during storage. Never store equipment near an open flame or spark which could ignite fuel or fuel vapors.

Battery

1. Remove, clean and store battery in upright position in a cool, dry place.
2. Check and recharge battery every 60 to 90 days while in storage.
3. Store batteries in a cool, dry place. Do not store on concrete floor. To reduce the self discharge rate, room temperature should not be above 80°F (27°C) or fall below 20°F (-7°C) to prevent electrolyte from freezing.

Engine (General)

1. While the engine is warm, remove the drain plug, drain the oil from the crankcase and change oil filter. Install drain plug and refill with fresh oil. Let engine cool before storing.
2. Clean exterior of engine. Paint exposed metal, or apply a light coat of rust preventative oil.
3. Add a fuel conditioner or biocide to prevent gelling or bacterial growth in fuel. See your local fuel supplier.
4. If storing indoors, drain fuel from tank.
5. Close fuel shut off valve.

After Storage

1. Check and reinstall battery
2. Check or service fuel filter and air cleaner.
3. Check oil level in the engine crankcase and hydraulic system.
4. Fill the fuel tank with fresh fuel. Open fuel shut off valve and bleed the fuel system.
5. Make certain that the tires are properly inflated.
6. Start and operate the engine at 1/2 throttle. Allow enough time for the engine to become properly warmed and lubricated.

⚠ WARNING

Never operate the engine without proper ventilation; exhaust fumes can be fatal when inhaled.

6.1 GENERAL TROUBLESHOOTING

The troubleshooting chart below lists basic problems that may occur during start-up and operation. For more detailed information regarding the hydraulic and electrical systems contact your area Jacobsen Dealer.

Symptoms	Possible Causes	Action
Engine will not start.	1. Parking brake disengaged, traction pedal not in neutral or aerator head lowered.	1. Check Interlock System and proper starting procedure.
	2. Battery low on charge or defective.	2. Inspect condition of battery and battery connections.
	3. Fuel tank empty or dirty. Fuel shut off valve closed	3. Fill with fresh fuel. Change fuel filter. Open fuel shut off valve
	4. Fuse blown.	4. Check and replace fuses as required.
Engine hard to start or runs poorly.	1. Fuel level low, fuel or fuel filter dirty.	1. Fill with fresh fuel. Change fuel filter.
	2. Air cleaner dirty.	2. Inspect and replace air filter.
	3. Injectors, fuel pump	3. Consult engine manual.
	4. Engine problem.	4. Consult engine manual
Engine stops.	1. Fuel tank empty.	1. Fill with fresh fuel.
	2. Interlocks not set before leaving operator's seat.	2. Traction pedal in neutral, raise aerator head and engage parking brake before leaving seat.
Engine overheating	1. Air intake restricted.	1. Clean cooling air intake.
	2. Engine overload	2. Reduce forward speed
Battery not holding charge.	1. Loose or corroded battery terminals.	1. Inspect and clean terminals
	2. Low electrolyte.	2. Refill to correct level.
	3. Charging system defective.	3. See engine manual
Leaving cores in the turf	1. Check tine part No.	1. Use tine Part No. 524419
Aerator does not react to traction pedal	1. Parking brake engaged	1. Disengage parking brake.
	2. Low hydraulic oil	2. Check reservoir level and fill if needed
Implement does not raise or lower	1. Low hydraulic oil	1. Check reservoir level and fill as needed
Gauges/Indicator not operating	1. Fuse blown	1. Check and replace fuses as required.
	2. Loose wiring	2. Check electrical connections.

6 TROUBLESHOOTING

6.2 DRIVE BELT (BREAKING)

Clean all dirt and debris from belt pulley “V”s.

Check proper clearance on belt guide studs.

1. 1/16” – 1/8” (1.6 – 3.2 mm) clearance between drive belt and belt guide studs.

Check alignment of drive and engine pulley

1. Position large pulley 1/8” – 3/16” (3.2 – 4.8 mm) away from aerator frame.
2. Align small pulley to large pulley within 1/16” (1.6 mm). Use shim part number 523317 behind engine pulley as needed.

Check pulleys for groove wear (See Figure 6A).

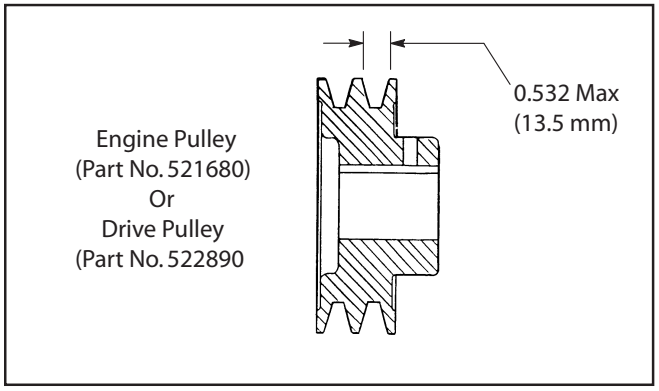


Figure 6A - Groove Wear (Maximum Allowed)

6.3 LEAVING CORES IN THE TURF

Use tine Part No. 524419

6.4 RETURN LINK HITTING REVERSING GEAR BOX

Install new bumper stop assembly (Part No. 547708).

Replace rubber bumpers (Part No. 523126).

Check alignment of keyways on reversing gearbox as shown in Figure 6B.

1. Keyways must be aligned as shown in Figure 6B. If the gears are off one tooth, the keyways will be approximately 24° out of alignment. This misalignment will cause one of the return links to hit the rubber bumpers hard and hit the bottom of the gearbox. Elongated holes in the turf, torn and tufted turf, and broken tines could also result from this condition.

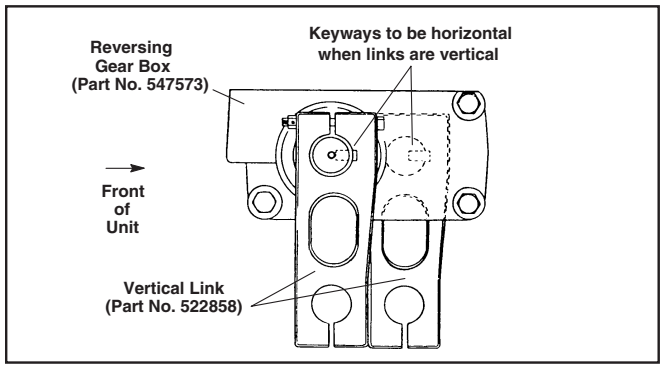


Figure 6B - Keyway Alignment

2. Check alignment of keyways by raising the aerating head and making a gauge using the template in Figure 6C. Place one edge along the bottom of the hydraulic tank and the other edge along the vertical link. Then hold the vertical link in place and move the gauge to the other vertical link on the same gearbox. The square edges of the gauge should fit flush against the vertical link and the bottom of the hydraulic tank, without moving the tine ram (See Figure 6D next page).

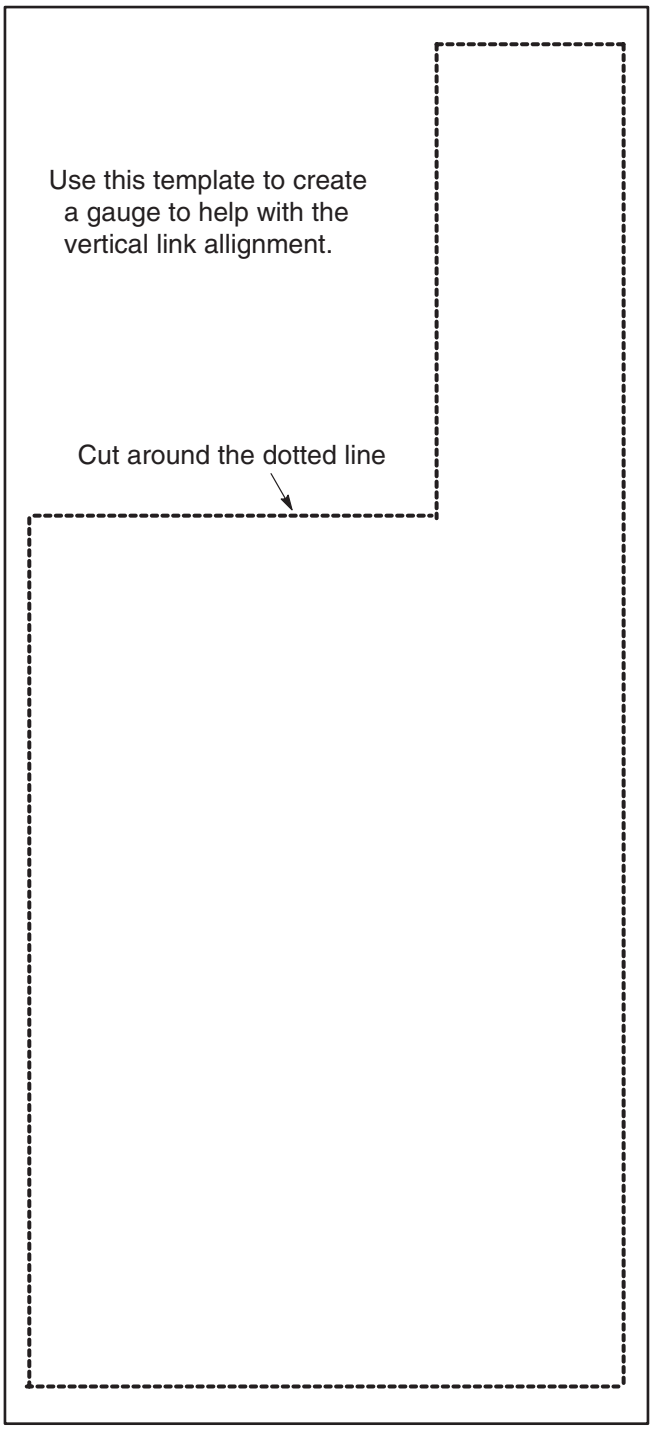
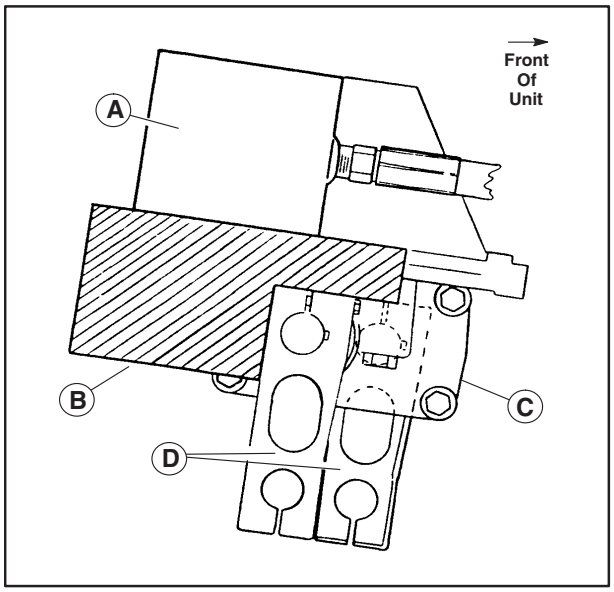


Figure 6C



A. Hydraulic Oil Tank

B. Gauge

C. Reversing Gear Box

D. Vertical Links

Figure 6D

6.5 UNIT WILL NOT MOVE

1. Hydraulic suction or return hose kinked or pinched.
   a. Check hose routing with head up and down.
2. Drive Chain broken.
3. Key on hydraulic motor sheared.
4. Hydrostat low on oil.
5. Oil filter plugged.
6. Oil too heavy.

6.6 SYSTEM NOISY

1. Air in hydraulic system.
   a. Check for proper oil level.
2. Loose suction line clamp.
3. Clogged suction filter.
4. Internal pump or motor damage.
5. Pump not turning (locked up).

6.7 SLUGGISH ACCELERATION OR DECELERATION

1. Air in hydraulic system.
   a. Check for proper oil level.
2. Low charge pressure.
   a. Charge pressure should be 50–70 P.S.I.(345–483 kPa).

6.8 HYDRAULIC OIL HOT

1. Oil supply low.
2. Lift control valve sticking.

6.9 CORRECTION OF TUFTING PROBLEM

1. Check tires for proper inflation: 12 psi (83 kPa).
2. Reduce engine speed.
3. Reduce hole spacing: 1–3/4" to 2–1/4" (44–57 mm).
4. Cut back or reduce watering of greens before aerating.
5. Use shorter tines.
6. Adjust aerator ram timing for reduced tufting. See Section 6.12 on page 25.
7. Check spacing control adjustment. See Section 4.6 on page 11.
8. Check gear backlash in reversing gearbox. See Section 4.7 on page 11.

6.10 HOLE SPACING INCONSISTENT

1. Linkage binding.
2. Operator is putting too much pressure on spacing control rod.

6.11 ENGINE WILL NOT START

1. Check to see if direction/speed pedal is in the neutral position and interlock system is working.
2. Refer to engine manual.

6.12 AERATOR RAM TIMING FOR REDUCED TUFTING

When aerating greens under certain conditions, as the unit moves forward, the holes may appear elongated with an angular tear or tuft toward the front of the hole. Usually tufting will be more severe on the holes produced by outer tine rams. This type of tufting is caused by the unit swaying from side to side, which is caused by the reciprocating masses and the forces produced when making holes in the turf.

Changing the ram timing of the unit will improve hole quality, but the ride generally will be rougher.

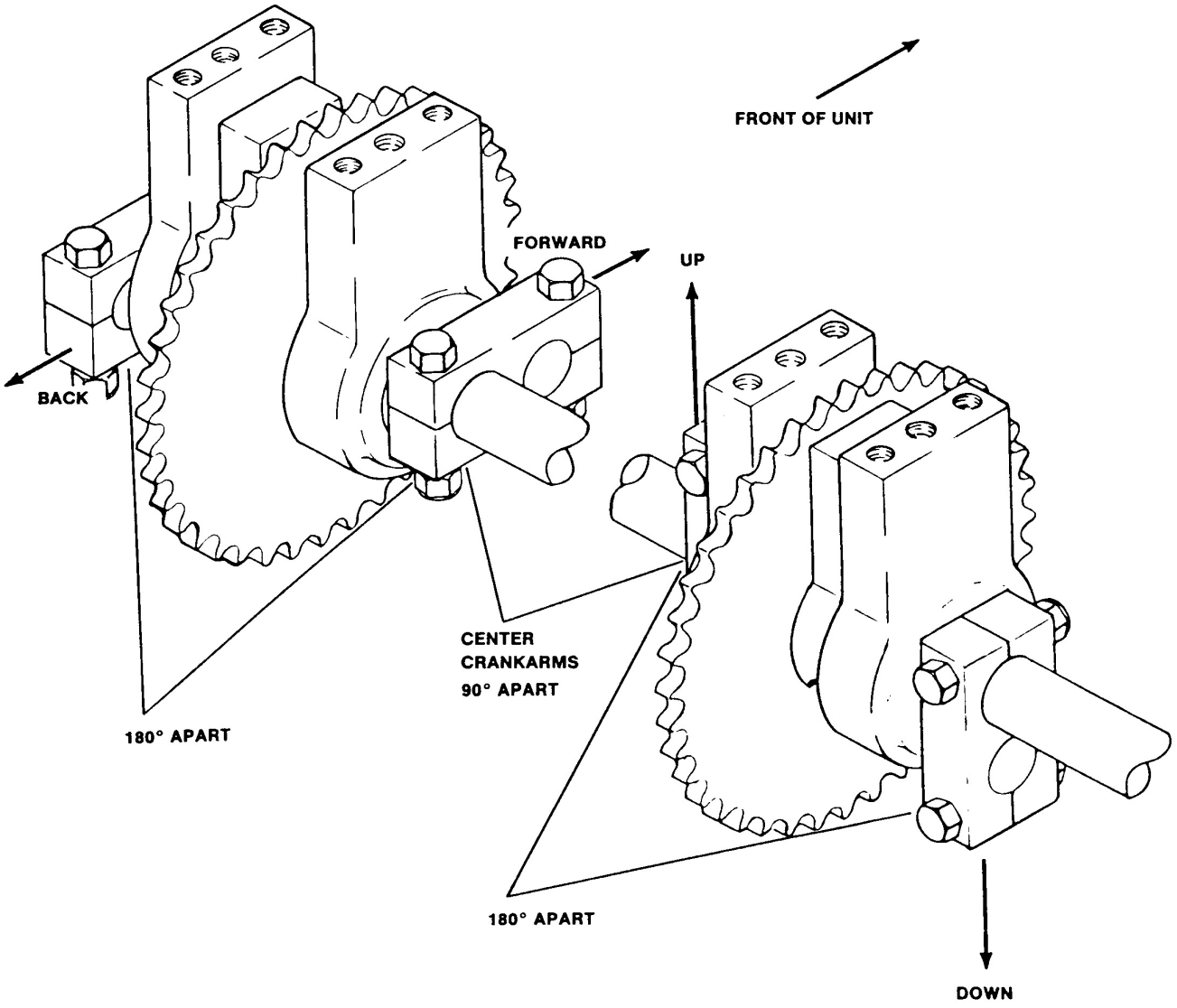
If ride quality is more important to you, or you do not have trouble with tufting, you may choose to not change the timing of the GA–30.

To determine how your GA–30 is timed, see the following sections. Section 6.14 on page 27 shows timing for REDUCED TUFTING (greens aeration), Section 6.13 on page 26 shows timing for SMOOTHER RIDE (fairway aeration).

6.13 TIMING FOR SMOOTHER RIDE (FAIRWAY AERATION)

Description

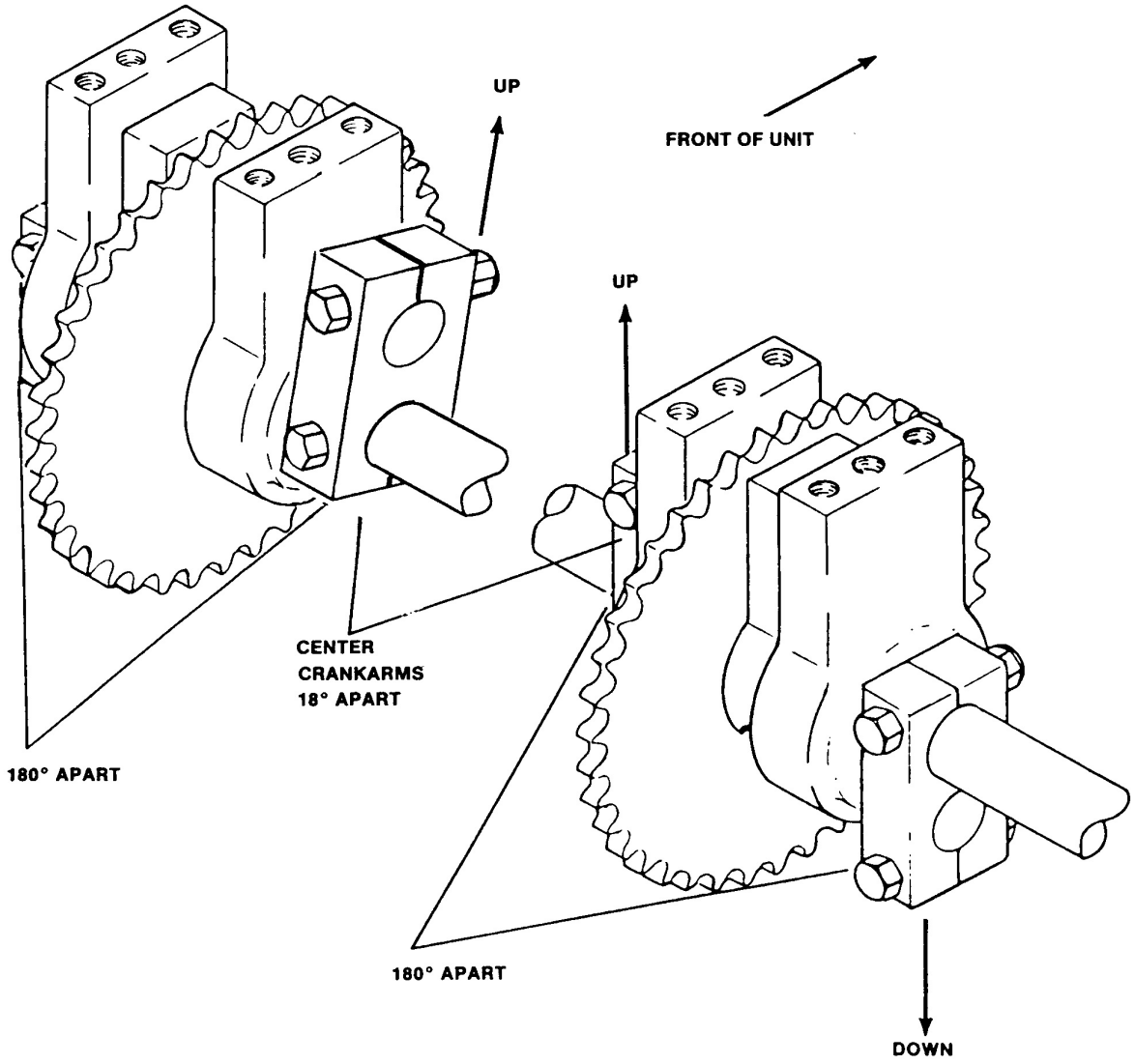
Rotate crankshaft/sprocket assemblies and position one center crank arm in the “UP” position. The other center crank arm will be offset approximately 90°. See illustration below.



6.14 TIMING FOR REDUCED TUFTING (GREEN AERATION)

Description

Rotate crankshaft/sprocket assemblies and position on center crank arm in the “UP” position. The other center crank arm will not be parallel, but should be offset approximately 18° (2 teeth on sprocket). See illustration below.



7 MAINTENANCE & LUBRICATION CHARTS

7.1 GENERAL

⚠ WARNING

Before you clean, adjust, or repair this equipment, disengage all drives, engage parking brake, stop engine and remove key from ignition switch to prevent injuries

1. Always clean the grease fitting before and after lubricating.
2. Lubricate with grease that meets or exceeds NLGI Grade 2 LB specifications. Apply grease with a manual grease gun and fill slowly until grease begins to seep out. Do not use compressed air guns.
3. Periodically apply a small amount of lithium based grease to the seat runners.
4. For smooth operation of all levers, pivot points and other friction points that are not shown on the lubrication chart apply several drops of SAE 30 oil every 40 hours or as required.
5. Grease fittings on Figure 7A, (A) daily, (G) annually, (F) daily or every time unit is refueled, (D) after 200 hours and (E) weekly.

7.2 LUBRICATION CHART

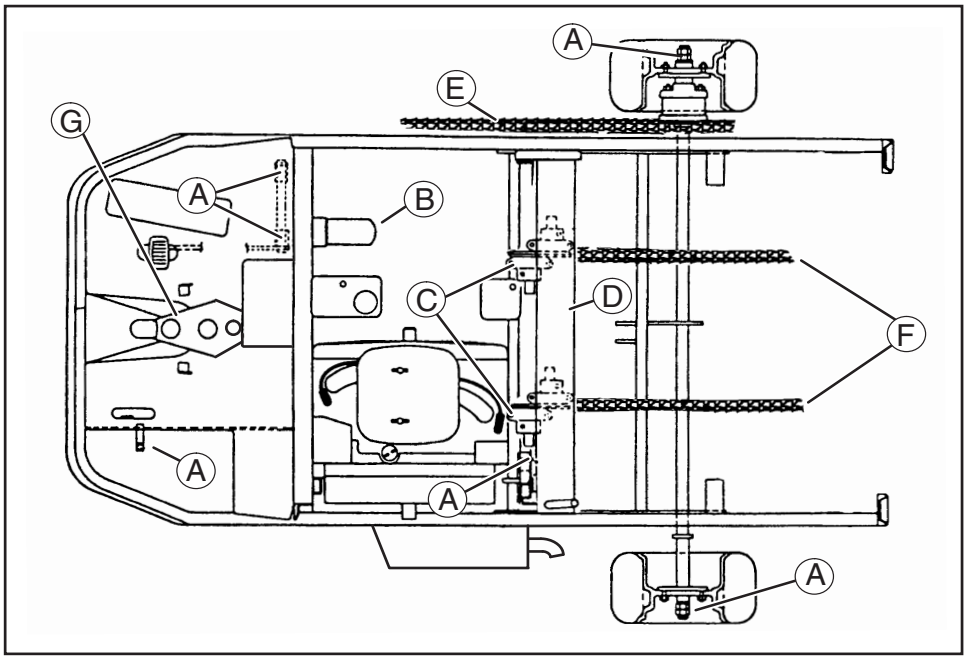


Figure 7A

A. Lubrication Fittings (5)

B. Hydraulic Filter

C. Reversing Gearbox (2)

D. Hydraulic Reservoir

E. Vehicle Drive Chain

F. Aerator Drive Chains (2)

G. Steering Gearbox (for units with steering wheel)

7.3 MAINTENANCE CHARTS

Recommended Service and Lubrication Intervals

	Every 8-10 Hours	Every 50 Hours	Every 100 Hours	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every 1000 Hours	Yearly	See Section	Lubricant Type
Air Filter	I		AR					R	2.2	
Battery Charge			I-C						5.8	
Belts	I-A*		I-A			R			4.2	
Brake		I-A*		A					4.3	
Cooling System	I-C								2.2	
Electrical System	I			I					5.11	
Engine Oil	I	R*	R						5.3	II
Engine Oil Filter		R*	R						5.2	
Fuel System		I							5.5	
Fuel Filter					R				5.5	
Grease Fittings - All	L	L	L			L			7.2	I
Hydraulic Hoses and Tubes	I***			I					5.9	
Hydraulic Oil	I-A			R					5.10	III
Hydraulic Oil Filter	I	R*		R					5.10	
Muffler and Exhaust	I			I					5.12	
Tires	I	I-A							5.17	
Aerator & Drive Chains	L	L							5.14	IV

A - Add or Adjust C - Clean I - Inspect L- Lubricate R - Replace AR - As Required

* Indicates initial service for new machines.

** Or every two years whichever comes first.

*** Inspect visible hoses and tubes for leaks or oil marks.

I - Manual grease gun with NLGI Grade 2 (Service Class LB).

II - Engine Oil - See Section 4.3

III - SAE 30W, API, CC, SG, or SH

IV - Lubriplate #13563

8 NOTES

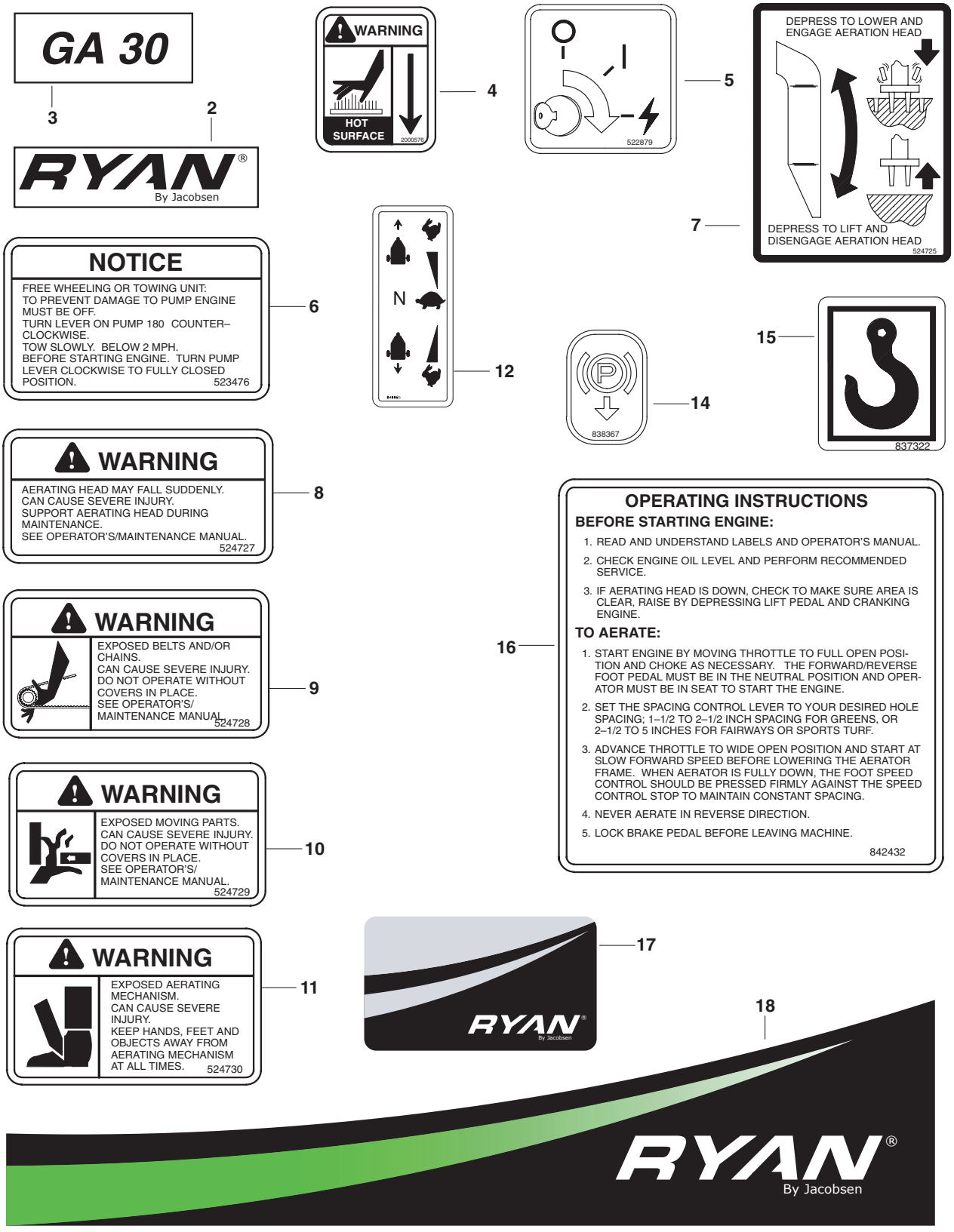
9.1 TABLE OF CONTENTS

1.1 ..... Decals 32
2.1 ..... Decals 34
3.1 ..... Panels and Shrouds 36
4.1 ..... Panels and Shrouds 38
5.1 ..... Lift Valve, Pedal & Linkage 39
6.1 ..... Controls 40
7.1 ..... Engine Frame 42
8.1 ..... Main Frame 44
9.1 ..... Drive Components 46
10.1 ..... Differential 48
11.1 ..... Brake Components 50
12.1 ..... Seat And Base 52
13.1 ..... Front Hub And Axle 54
14.1 ..... Tire And Wheel 55
15.1 ..... Battery Hold Down 56
16.1 ..... Electrical Components 57
17.1 ..... Steering Components 58
18.1 ..... Steering Components 60
19.1 ..... Steering Housing 62
20.1 ..... Engine 64
21.1 ..... Idler Pulley 66
22.1 ..... Fuel Tank, Pan, Filter & Hose 68
23.1 ..... Hydraulic System 70
24.1 ..... Hydrostat Linkage 72
25.1 ..... Hydrostat Linkage 74
26.1 ..... Tine Rams And Components 76
27.1 ..... Tine Rams And Components 78
28.1 ..... Aerator Frame 80
29.1 ..... Aerator Frame 82
30.1 ..... Reversing Gearbox & Vertical Links 84
31.1 ..... Turf Guard 86
32.1 ..... Tine Holders 88
33.1 ..... Accesory Quint Coring Tine 90
34.1 ..... Accesory Quint Solid Tine 91
35.1 ..... Tines 92
36.1 ..... Accessory Windrow Attachment 93
37.1 ..... Wiring Diagram 94
38.1 ..... Hydraulic Diagram 95
39.1 ..... O-Ring Chart 96

1.1 Decals

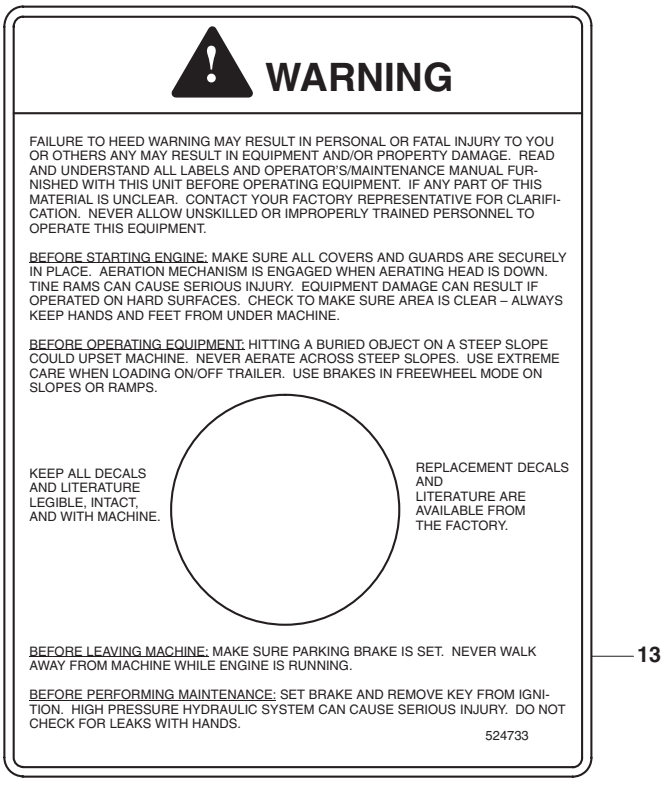
Optional English Text Decals

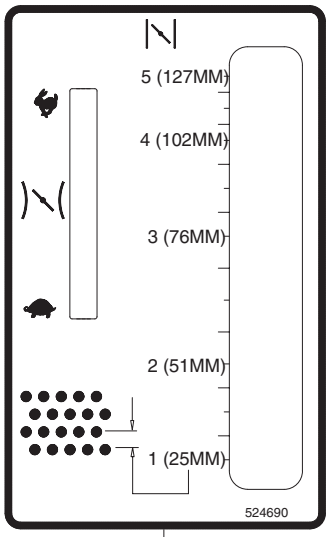
MODEL 544915


GA 30
3
2
RYAN
By Jacobsen
WARNING
HOT SURFACE
2000575
4
522879
5
DEPRESS TO LOWER AND ENGAGE AERATION HEAD
DEPRESS TO LIFT AND DISENGAGE AERATION HEAD
524725
7
NOTICE
FREE WHEELING OR TOWING UNIT:
TO PREVENT DAMAGE TO PUMP ENGINE MUST BE OFF.
TURN LEVER ON PUMP 180 COUNTER–CLOCKWISE.
TOW SLOWLY. BELOW 2 MPH.
BEFORE STARTING ENGINE. TURN PUMP LEVER CLOCKWISE TO FULLY CLOSED POSITION.
523476
6
N
12
P
838367
14
15
837322
WARNING
AERATING HEAD MAY FALL SUDDENLY.
CAN CAUSE SEVERE INJURY.
SUPPORT AERATING HEAD DURING MAINTENANCE.
SEE OPERATOR'S/MAINTENANCE MANUAL.
524727
8
WARNING
EXPOSED BELTS AND/OR CHAINS.
CAN CAUSE SEVERE INJURY.
DO NOT OPERATE WITHOUT COVERS IN PLACE.
SEE OPERATOR'S/ MAINTENANCE MANUAL.
524728
9
OPERATING INSTRUCTIONS
BEFORE STARTING ENGINE:
1. READ AND UNDERSTAND LABELS AND OPERATOR'S MANUAL.
2. CHECK ENGINE OIL LEVEL AND PERFORM RECOMMENDED SERVICE.
3. IF AERATING HEAD IS DOWN, CHECK TO MAKE SURE AREA IS CLEAR, RAISE BY DEPRESSING LIFT PEDAL AND CRANKING ENGINE.
TO AERATE:
1. START ENGINE BY MOVING THROTTLE TO FULL OPEN POSITION AND CHOKE AS NECESSARY. THE FORWARD/REVERSE FOOT PEDAL MUST BE IN THE NEUTRAL POSITION AND OPERATOR MUST BE IN SEAT TO START THE ENGINE.
2. SET THE SPACING CONTROL LEVER TO YOUR DESIRED HOLE SPACING; 1–1/2 TO 2–1/2 INCH SPACING FOR GREENS, OR 2–1/2 TO 5 INCHES FOR FAIRWAYS OR SPORTS TURF.
3. ADVANCE THROTTLE TO WIDE OPEN POSITION AND START AT SLOW FORWARD SPEED BEFORE LOWERING THE AERATOR FRAME. WHEN AERATOR IS FULLY DOWN, THE FOOT SPEED CONTROL SHOULD BE PRESSED FIRMLY AGAINST THE SPEED CONTROL STOP TO MAINTAIN CONSTANT SPACING.
4. NEVER AERATE IN REVERSE DIRECTION.
5. LOCK BRAKE PEDAL BEFORE LEAVING MACHINE.
842432
16
WARNING
EXPOSED MOVING PARTS.
CAN CAUSE SEVERE INJURY.
DO NOT OPERATE WITHOUT COVERS IN PLACE.
SEE OPERATOR'S/ MAINTENANCE MANUAL.
524729
10
WARNING
EXPOSED AERATING MECHANISM.
CAN CAUSE SEVERE INJURY.
KEEP HANDS, FEET AND OBJECTS AWAY FROM AERATING MECHANISM AT ALL TIMES.
524730
11
RYAN
By Jacobsen
17
18
RYAN
By Jacobsen

Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	524690	1	Decal, control panel	
2	4124812	3	Decal, Ryan	
3	4124713	3	Decal, GA - 30	
4	2000576	1	Decal, warning, hot surface	
5	522879	1	Decal, key switch	
6	523476	1	Decal, notice - towing instructions	
7	524725	1	Decal, hydraulic lift aerator head	
8	524727	1	Decal, warning head support	
9	524728	6	Decal, warning, chain & belt	
10	524729	1	Decal, warning, crushing	
11	524730	4	Decal, warning, piercing	
12	524731	1	Decal, direction/speed control	
13	524733	1	Decal, warning - operation	
14	838367	1	Decal, parking brake	
15	837322	5	Decal, slinging	
16	842432	1	Decal, operating instructions	
17	4124495	1	Decal, Rear Stripe	
18	4124757	1	Decal, Ryan Emblem	

MODEL 544915 & 544917


WARNING
FAILURE TO HEED WARNING MAY RESULT IN PERSONAL OR FATAL INJURY TO YOU OR OTHERS ANY MAY RESULT IN EQUIPMENT AND/OR PROPERTY DAMAGE. READ AND UNDERSTAND ALL LABELS AND OPERATOR'S/MAINTENANCE MANUAL FURNISHED WITH THIS UNIT BEFORE OPERATING EQUIPMENT. IF ANY PART OF THIS MATERIAL IS UNCLEAR. CONTACT YOUR FACTORY REPRESENTATIVE FOR CLARIFICATION. NEVER ALLOW UNSKILLED OR IMPROPERLY TRAINED PERSONNEL TO OPERATE THIS EQUIPMENT.
BEFORE STARTING ENGINE: MAKE SURE ALL COVERS AND GUARDS ARE SECURELY IN PLACE. AERATION MECHANISM IS ENGAGED WHEN AERATING HEAD IS DOWN. TINE RAMS CAN CAUSE SERIOUS INJURY. EQUIPMENT DAMAGE CAN RESULT IF OPERATED ON HARD SURFACES. CHECK TO MAKE SURE AREA IS CLEAR – ALWAYS KEEP HANDS AND FEET FROM UNDER MACHINE.
BEFORE OPERATING EQUIPMENT: HITTING A BURIED OBJECT ON A STEEP SLOPE COULD UPSET MACHINE. NEVER AERATE ACROSS STEEP SLOPES. USE EXTREME CARE WHEN LOADING ON/OFF TRAILER. USE BRAKES IN FREEWHEEL MODE ON SLOPES OR RAMPS.
KEEP ALL DECALS AND LITERATURE LEGIBLE, INTACT, AND WITH MACHINE.
REPLACEMENT DECALS AND LITERATURE ARE AVAILABLE FROM THE FACTORY.
BEFORE LEAVING MACHINE: MAKE SURE PARKING BRAKE IS SET. NEVER WALK AWAY FROM MACHINE WHILE ENGINE IS RUNNING.
BEFORE PERFORMING MAINTENANCE: SET BRAKE AND REMOVE KEY FROM IGNITION. HIGH PRESSURE HYDRAULIC SYSTEM CAN CAUSE SERIOUS INJURY. DO NOT CHECK FOR LEAKS WITH HANDS.
524733
13



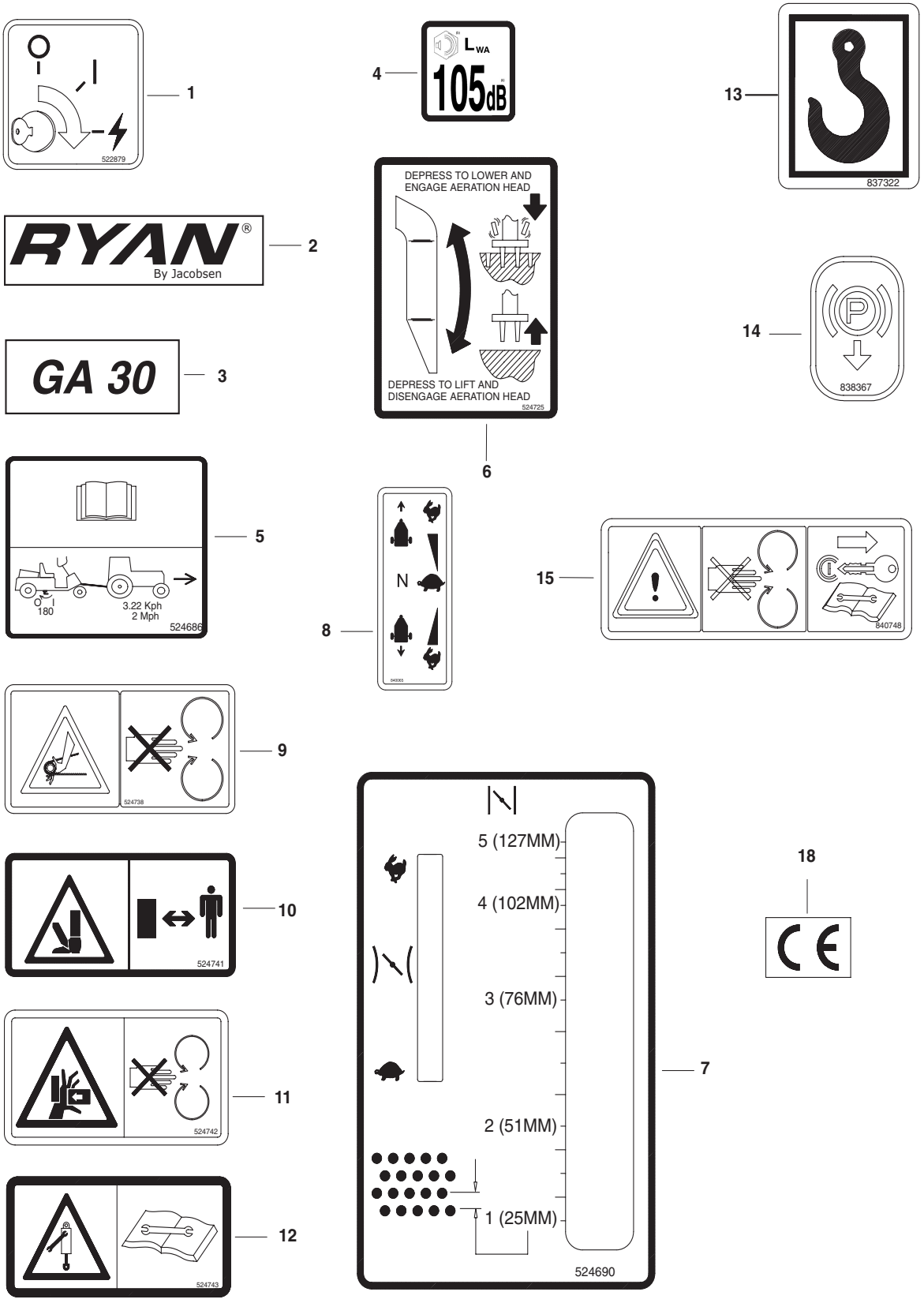
> Change from previous revision

2.1 Decals

Serial No. All

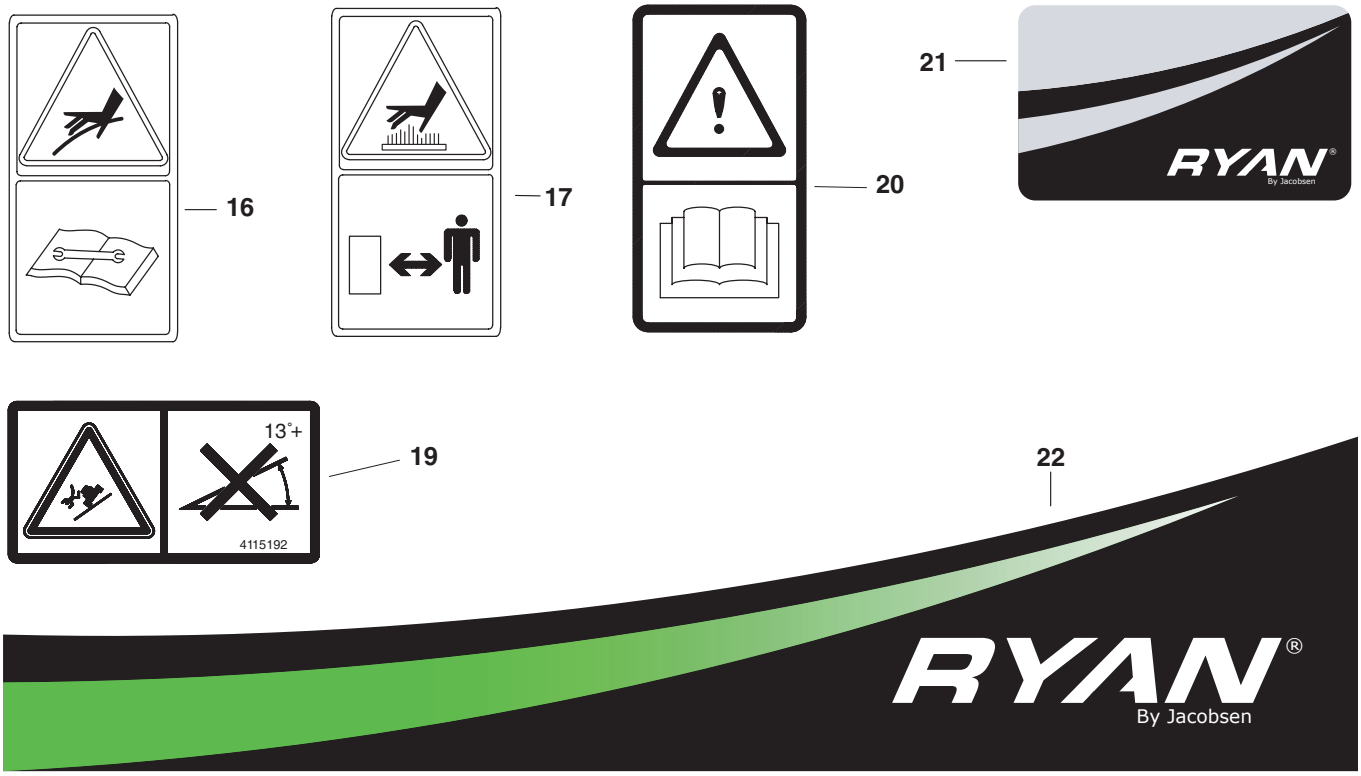
Standard Pictogram Decals

MODEL 544916



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	522879	1	Decal, key switch	
2	4124812	3	Decal, Ryan	
3	4124713	3	Decal, GA - 30	
4	009034770	1	Decal, sound level	
5	524686	1	Decal, towing	
6	524688	1	Decal, hydraulic lift aerator head	
7	524690	1	Decal, control panel	
8	524731	1	Decal, direction/speed control	
9	524738	6	Decal, caution, hand injury	
10	524741	4	Decal, caution, feet	
11	524742	1	Decal, caution, hand crush	
12	724743	1	Decal, caution, hydraulic cylinder	
13	837322	5	Decal, slinging	
14	838367	1	Decal, parking brake	
15	840748	1	Decal, warning guards	
16	A903493	1	Decal, caution oil	
17	009034920	1	Decal, warning hot	
18	009039290	1	Decal, CE	
19	4115182	1	Decal, slope warning EC	
20	009034910	1	Decal, instructions	
21	4124495	1	Decal, Rear Stripe	
22	4124757	1	Decal, Ryan Emblem	

MODEL 544916



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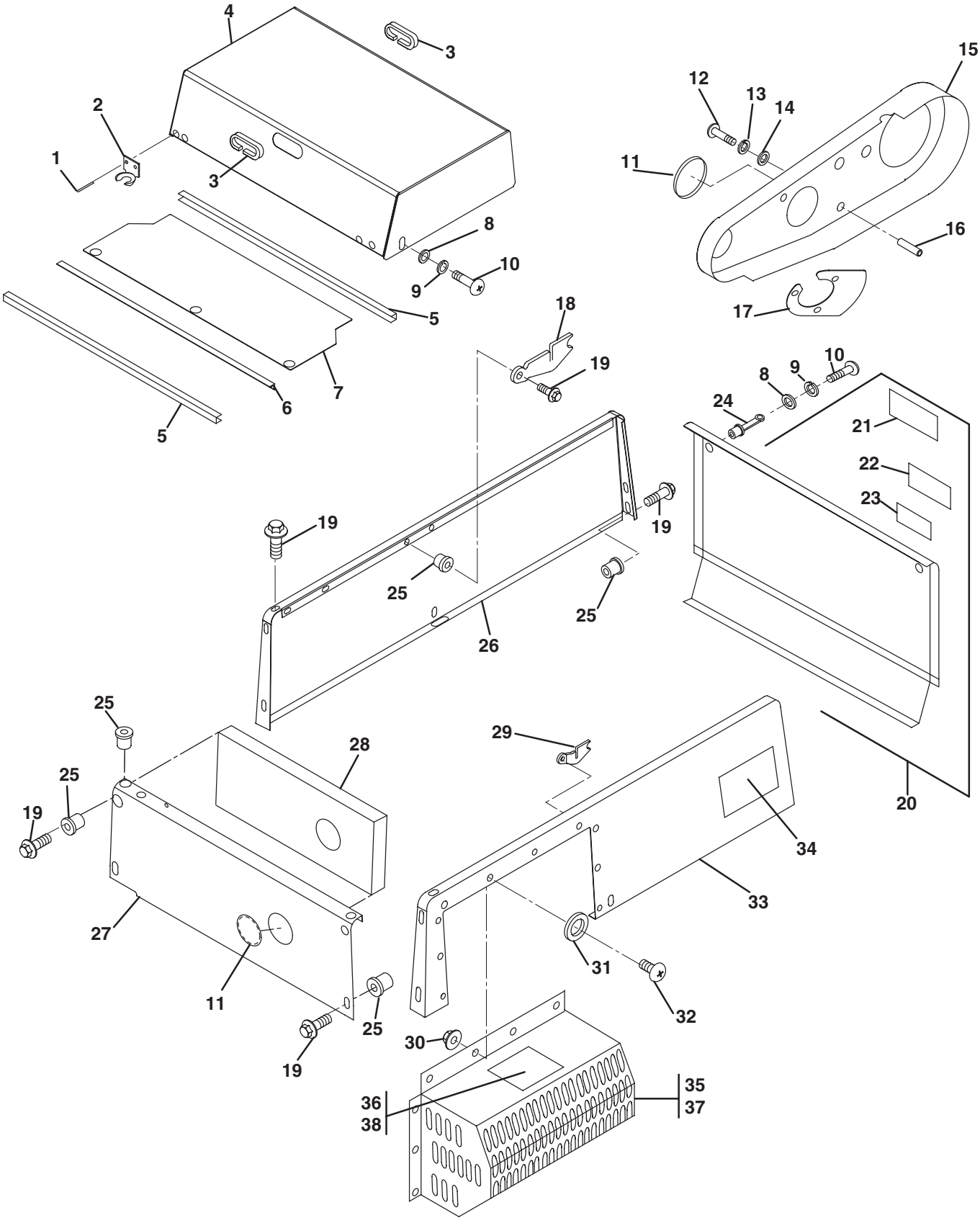
3.1 Panels and Shrouds

Serial No. All

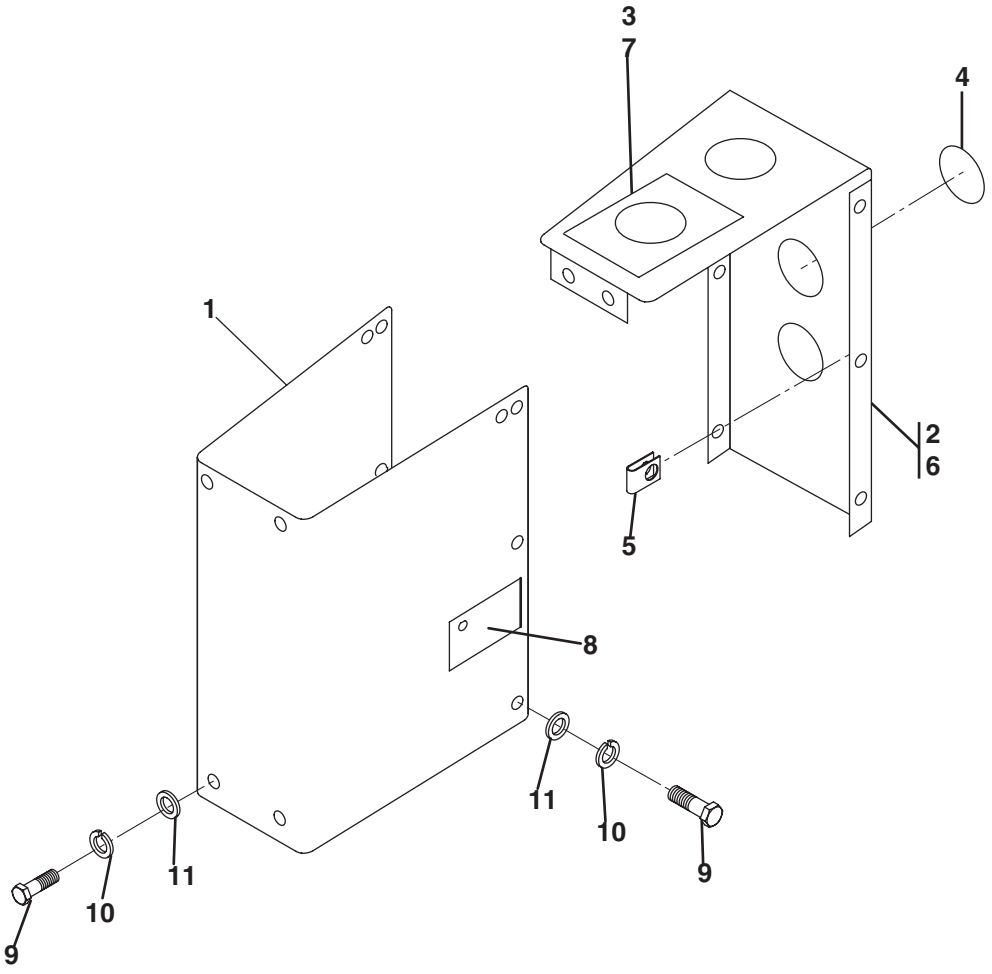


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	800390	4	Rivet, pop, 1/8” x 25/64”	
2	888102	2	Keeper, latch	
3	821893	AR	Moulding 12’ (3.7M)	
4	4116552.6	1	Cover	
5	829726	AR	Trim, push-on, black, 12’ (3.7M)	
6	4116300.7	1	Angle, expansion joint	
7	524452	1	Cover	
8	306453	4	Washer, 5/16”	Model 88118
9	446134	4	Lockwasher, 5/16”	Model 88118
10	400184	4	Screw, 5/16—18 x 3/4”	Model 88118
11	824438	2	Plug, hole	
12	400278	2	Screw, 3/8—16 x 3 1/2”	
13	446140	2	Lockwasher, 3/8”	
14	453010	2	Washer, 3/8”	
15	524145	1	Guard, chain	
16	524163	2	Spacer, guard	
17	524208	1	Panel, cover chain guard	
18	4116298.7	1	Anchor, right cover	
19	548902	16	Screw, flangelock, 5/16—18 x 1	
20	4116865	1	Cover, rear, w/decals	
21	4124812	1	•Decal, Ryan	
22	4124713	3	•Decal, GA 30	
23	835892	1	•Decal, danger hands and feet	
24	523054	2	Plug, bail	
25	831846	16	Nut, isolation	
26	4116550.6	1	Panel, body, right	
27	4116297.7	1	Panel, body, front	
28	523212	1	Insulation, front panel	
29	4116299.7	1	Anchor, left cover	
30	445784	10	Nut, flangelock, 1/4—20	
31	453023	10	Washer, 1/4”	
32	400104	10	Screw, 1/4—20 x 1/2”	
33	4116551.6	1	Panel, body, left	
34	4124812	3	Decal, Ryan	
35	540341	1	Cover, muffler, w/decal	Optional English Text Decal
36	2000576	1	•Decal, warning-hot surface	
37	894177	1	Cover, muffler, w/decal	Pictogram Decal
38	9034920	1	•Decal, warning-hot	

> Change from previous revision

4.1 Panels and Shrouds

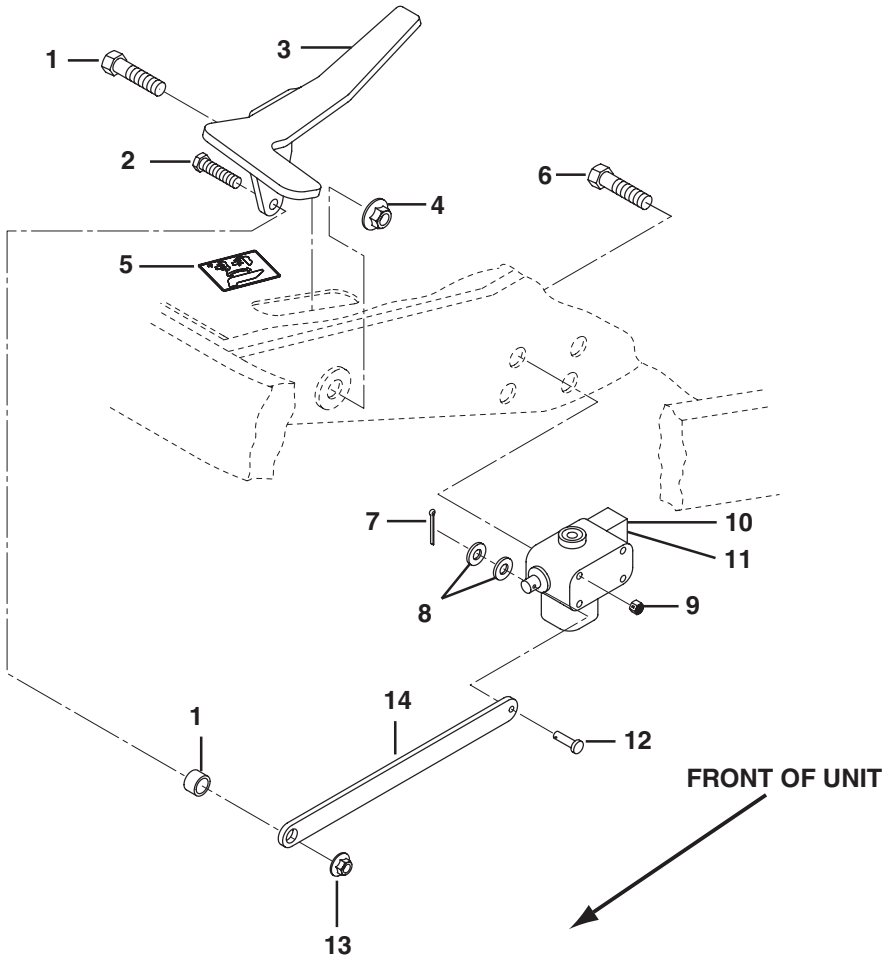
Serial No. All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4116549.6	1	Cover, steering	
2	4116547	1	Panel, instrument, w/decals	Optional English Text Decals
3	524733	1	•Decal, warning-operation	
4	825922	1	Plug, hole	
5	800449	6	Nut, speed, 1/4-20	
6	4116548	1	Panel, instrument, w/decals	Pictogram Decals
7	840748	1	•Decal, warning guards	
8	4124713	2	Decal, GA 30	
9	400108	12	Screw, 1/4-20 x 3/4”	
10	446128	12	Lockwasher, 1/4”	
11	453023	12	Washer, 1/4”	

> Change from previous revision

5.1 Lift Valve, Pedal & Linkage

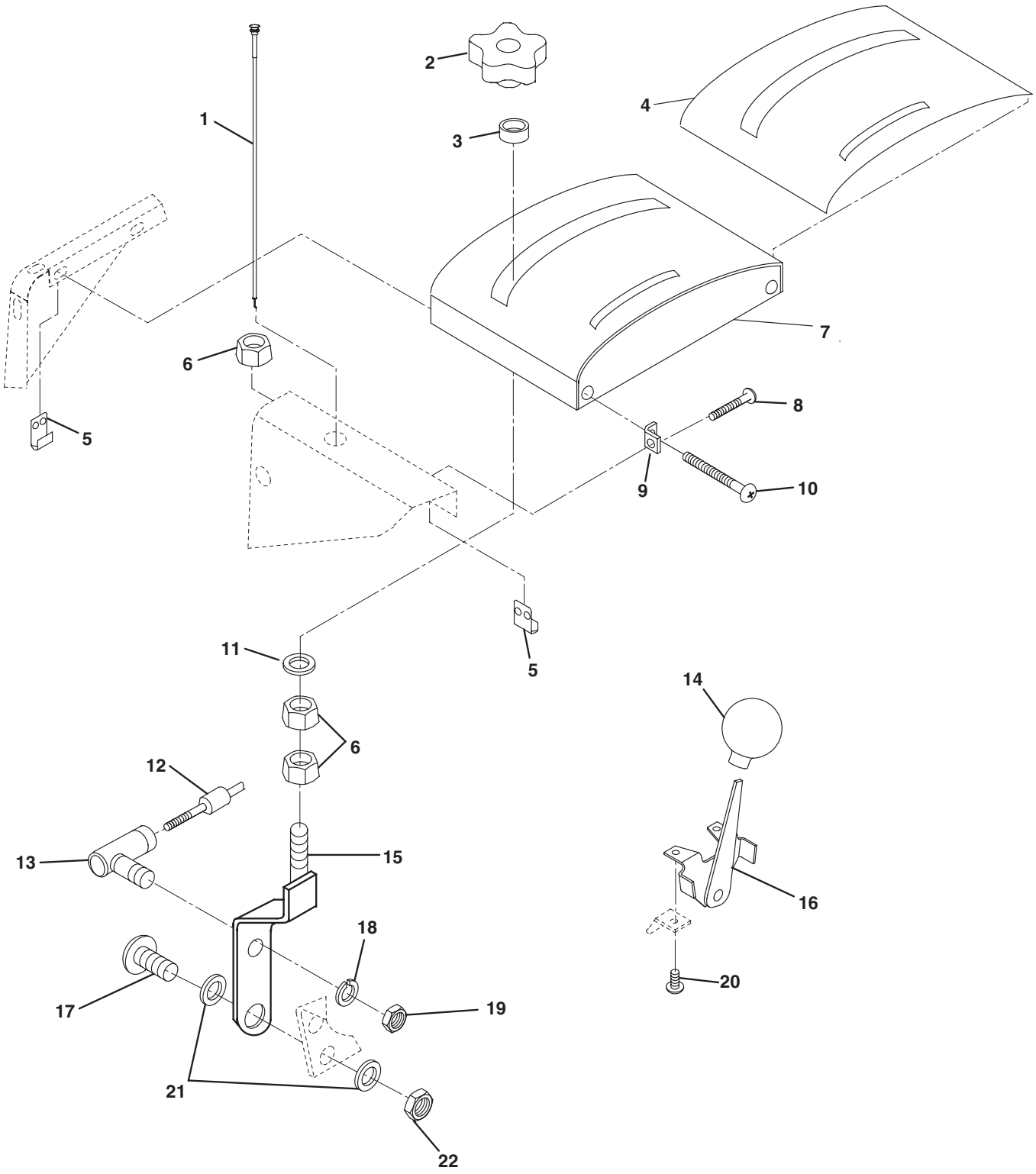


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	400342	1	Screw, 7/16-14 x 2 1/4”	
2	400188	1	Screw, 5/16-18 x 1”	
3	523654	1	Pedal, lift	
4	548912	1	Nut, flangelock, 7/16-14 x 2 1/4”	
5	524688	1	Decal, hydraulic lift aerator head	
6	400132	4	Screw, 1/4-20 x 2 3/4”	
7	460014	1	Pin, cotter, 3/32” x 3/4”	
8	452002	2	Washer, #10	
9	445794	4	Nut, crownlock, 1/4-20	
10	884681	1	Valve, hydraulic	
11	884599	AR	• Kit, seal	
12	461453	1	Pin, clevis, 3/16” x 1”	
13	445795	1	Nut, crownlock, 5/16-18	
14	524612	1	Link, lift valve	
15	819337	1	Bushing	

> Change from previous revision

6.1 Controls

Serial No. All

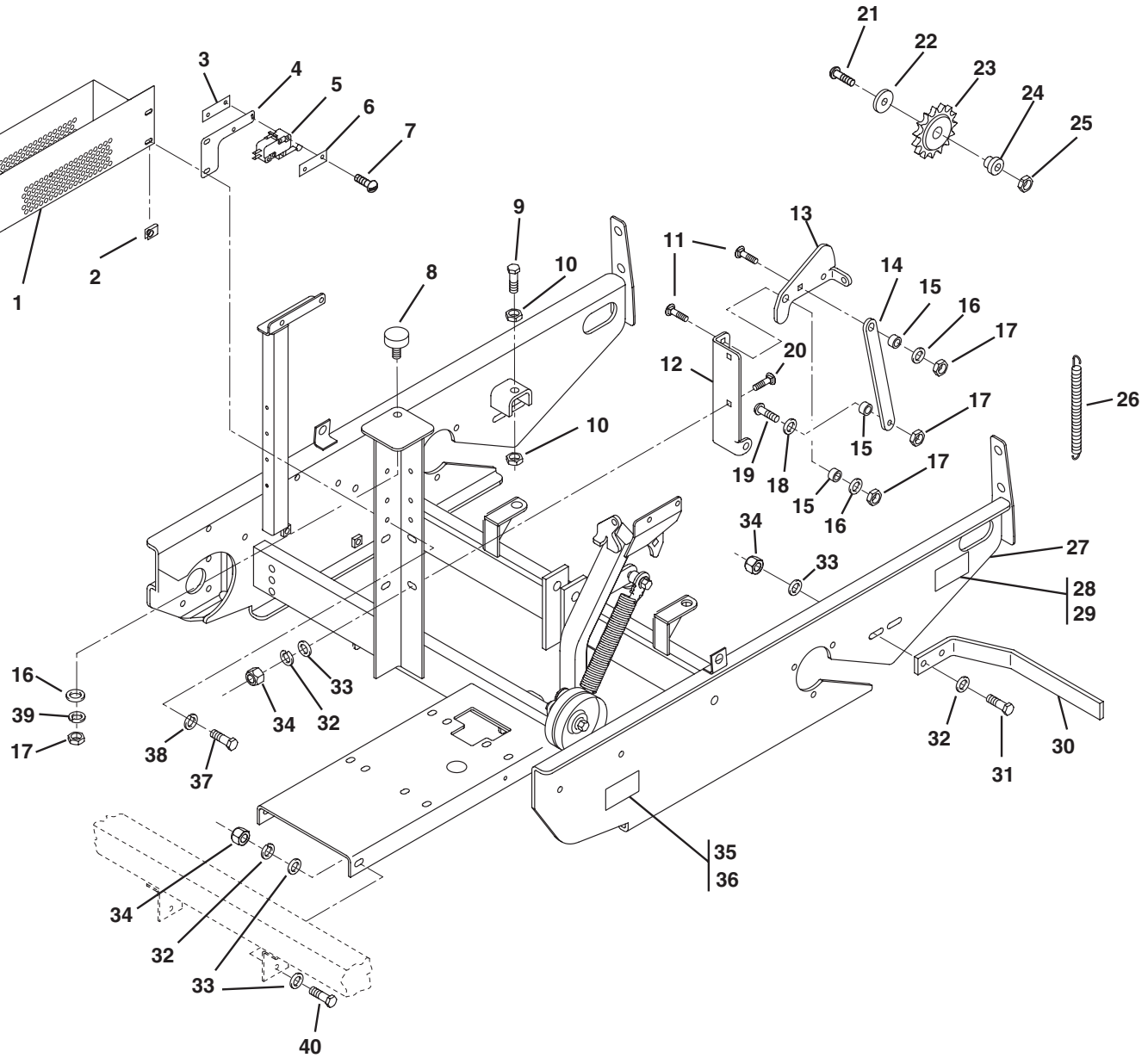


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	830815	1	Cable, choke	
2	523052	1	Knob, control	
3	523176	1	Bushing	
4	524690	1	Decal, control panel	
5	800536	3	Nut, speed, 5/16—18	
6	443112	3	Nut, 3/8—24 Hex	
7	547574	1	Panel, control	
8	400182	1	Screw, 5/16—18 x 5/8”	
9	523088	1	Bracket, mounting	
10	400210	2	Screw, 5/16—18 x 5”	
11	523183	1	Washer, nylon, 3/8”	
12	547881	1	Cable, shifter	
13	831518	1	Ball joint	
14	827821	1	Knob, throttle lever	
15	523736	1	Lever, control	
16	547610	1	Cable, throttle	
17	400260	1	Screw, 3/8—16 x 7/8	
18	446128	1	Lockwasher, 1/4”	
19	443104	1	Nut, 1/4—28	
20	800896	2	Screw, tapping, #10—24 x 3/4”	
21	453010	2	Washer, 3/8”	
22	444742	1	Nut, lock, 3/8—16	

> Change from previous revision

7.1 Engine Frame

Serial No. All

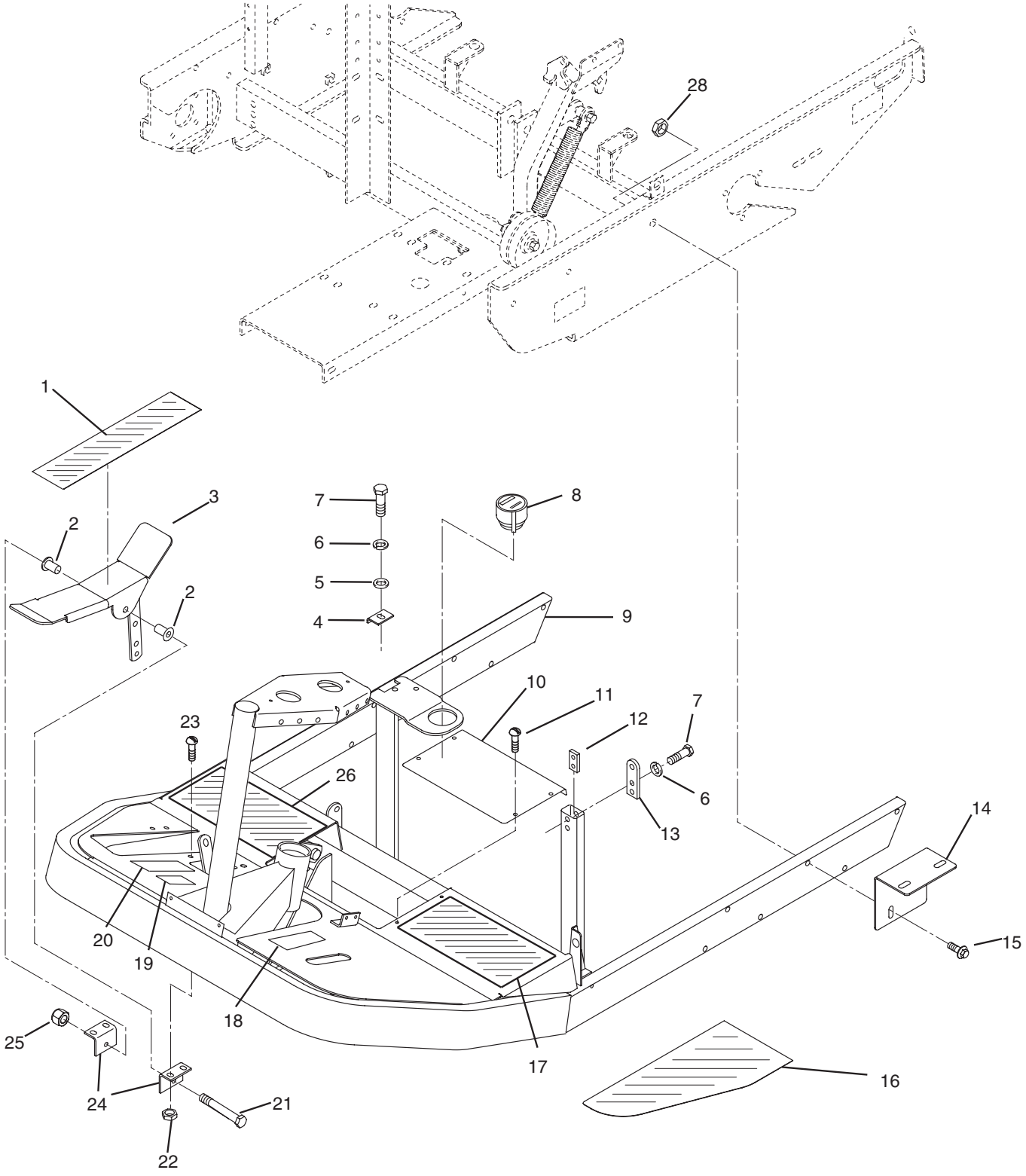


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	523426	1	Tool box	
2	800449	2	Nut, speed, 1/4 - 20	
3	841151	1	Nut, #4 twin tapping	
4	524720	1	Switch mounting plate	
5	829754	1	Snap action switch	
6	524721	1	Retaining strap	
7	800897	2	Tapping screw, #4 - 40 x 3/4”	
8	523224	1	Rubber bumper	
9	400406	2	Screw, 1/2 - 13 x 1 1/4”	
10	443118	4	Nut, 1/2 - 13	
11	440082	2	Carriage bolt, 5/16 - 18 x 1”	
12	524167	1	Pivot mounting bracket	
13	524170	1	Pivot cam	
14	524166	1	Pivot link	
15	823332	3	Bushing	
16	453009	3	Washer, 5/16”	
17	445795	4	Crownlock nut, 5/16 - 18	
18	809152	1	Washer, 5/16”	
19	400188	1	Screw, 5/16 - 18 x 1”	
20	440118	2	Carriage bolt, 3/8 - 16 x 1”	
21	400268	1	Screw, 3/8 - 16 x 1 3/4”	
22	515390	1	Retainer	
23	547596	1	Idler sprocket	
24	523100	1	Bushing	
25	524268	1	Idler nut	
26	805376	1	Extension spring	
27	540036	1	Inner frame	
28	524730	2	Piercing warning decal	Optional English Text Decal
29	524741	2	Caution feet decal	Pictogram Decal
30	524169	2	Tire scraper	
31	400264	4	Screw, 3/8 - 16 x 1 1/4”	
32	446140	8	Lockwasher, 3/8”	
33	453010	10	Washer, 3/8”	
34	445796	8	Crownlock nut, 3/8 - 16	
35	524728	2	Chain & belt warning decal	
36	524738	2	Caution hand injury decal	Optional English Text Decal
37	400108	4	Screw, 1/4 - 20 x 3/4”	Pictogram Decal
38	446128	4	Lockwasher, 1/4”	
39	446134	3	Lockwasher, 5/16”	
40	400262	2	Screw, 3/8 - 16 x 1”	

> Change from previous revision

8.1 Main Frame

Serial No. All

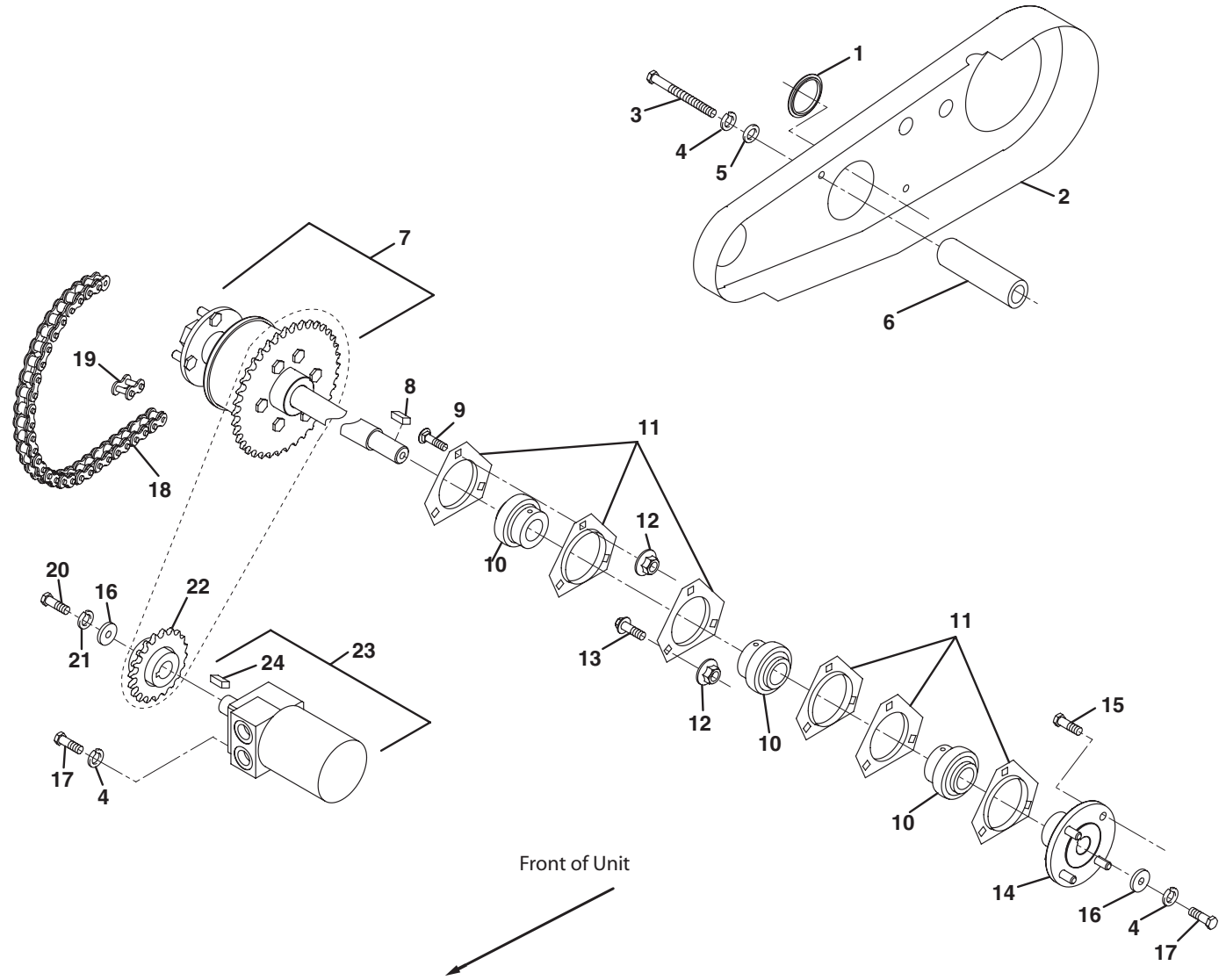


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	523169	1	Pedal tread	
2	522009	2	Bearing	
3	547614	1	Pedal	
4	523075	1	Bracket	
5	453009	1	Washer, 5/16”	
6	446134	3	Lockwasher, 5/16”	
7	400184	3	Screw, 5/16 - 18 x 3/4”	
8	886802	1	Hour meter	
9	540327	1	Frame, Main	
10	524736	1	Battery cover plate	
11	408883	4	Screw, Tapping, 1/4 - 20 x 1/2”	
12	523106	1	Nut, double	
13	522912	1	Bracket	
14	524802	1	Muffler mounting bracket	
15	800477	2	Screw, flangelock, 3/8 - 16 x 1 3/4”	
16	523073	1	Pad	
17	523223	1	Left floor tread	
18	524688	1	Hydraulic lift aerator head decal	
19	838367	1	Parking brake decal	
20	524731	1	Direction / speed control decal	
21	400208	1	Screw, 5/16 - 18 x 4 1/2”	
22	445781	4	Nut, flangelock, 5/16 - 18	
23	800177	4	Screw, P.T.H., 5/16 - 18 x 3/4”	
24	523197	2	Mounting bracket	
25	445795	1	Nut, crownlock, 5/16 - 18	
26	523171	1	Right floor tread	
27	829726	AR	Trim, push on	Not pictured
28	445783	2	Flange Lock Nut, 3/8-16	

> Change from previous revision

9.1 Drive Components

Serial No. All

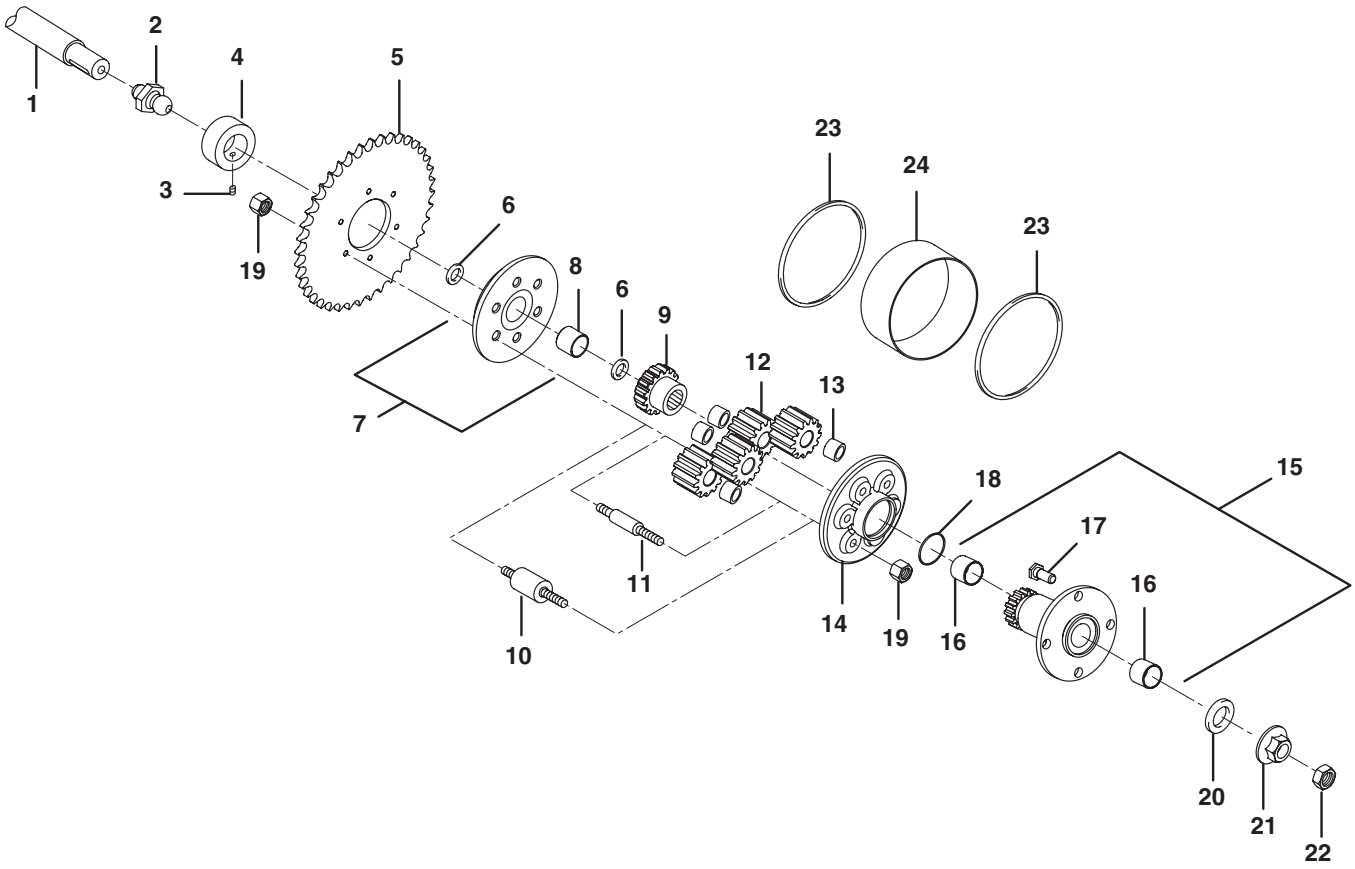


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	824438	1	Plug, hole	
2	524145	1	Guard, chain	
3	400278	2	Screw, 3/8-16 x 3 1/2”	
4	446140	7	Lockwasher, 3/8”	
5	453010	4	Washer, 3/8”	
6	524163	2	Spacer	
7	540045	1	Differential, complete	See Differential Drawing
8	523185	1	Key, 1/4 x 1/4 x 1 1/2”	
9	440118	3	Bolt, carriage, 3/8-16 x 1”	
10	835105	3	Bearing, ball	
11	835104	6	Flange, bearing	
12	445783	9	Nut, flangelock, 3/8-16	
13	548905	6	Screw, flangelock, 3/8-16 x 1”	
14	547581	1	Hub, wheel	
15	816320	4	• Screw, wheel mount,	7/16-20 x 1 1/8”
16	515390	2	Retainer	
17	400260	5	Screw, 3/8-16 x 7/8”	
18	547887	1	Chain, No. 50 sealed roller	
19	522123	1	• Link, connecting (sealed)	
20	400112	1	Screw, 1/4-20 x 1”	
21	446128	1	Lockwasher, 1/4”	
22	540043	1	Sprocket, drive, 20 tooth	
23	524811	1	Motor, hydraulic	
24	548365	1	• Key, 1/4 x 1/4 x 1 1/4”	

> Change from previous revision

10.1 Differential

Serial No. All

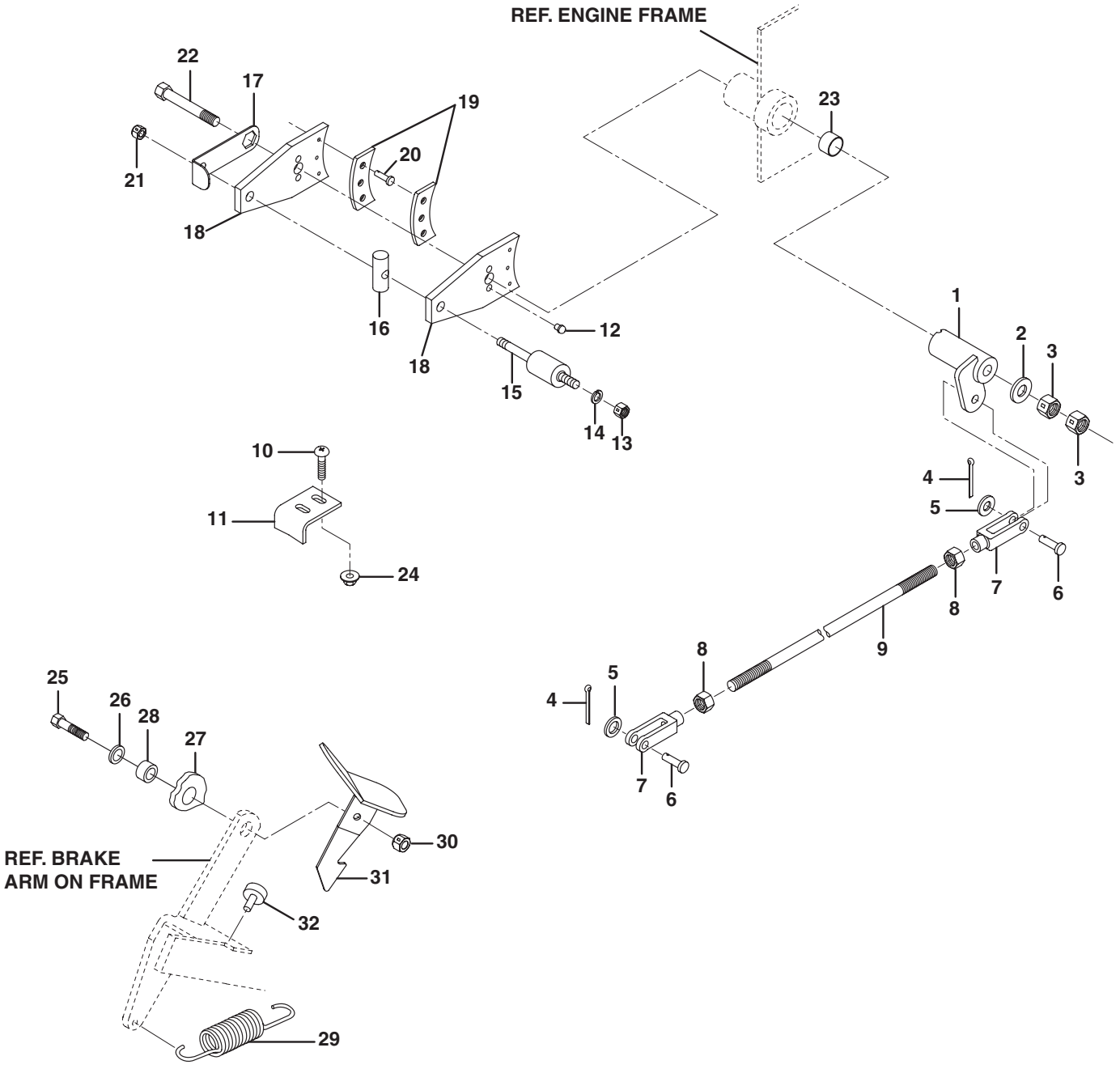


Item	Part No.	Qty.	Description	Serial Numbers/Notes
	540045	1	Differential, complete	
1	524149	1	• Shaft, axle	
2	2702168	1	• Fitting, lubrication, 1/4-28	
3	548205	1	• Screw, set, 1/4-20 x 1/4”	
4	524148	1	• Spacer, axle	
5	522856	1	• Sprocket, 38 tooth	
6	520231	2	• Washer, thrust, 1 1/4”	
7	540046	1	• Housing, differential	
8	524155	1	• • Bushing	
9	524150	1	• Gear, axle shaft	
10	524151	2	• Spacer, differential	
11	524153	4	• Spacer, differential	
12	842094	4	• Gear, Planetary	
13	814483	4	• Spacer, gear	
14	522581	1	• Housing, end	
15	540040	1	• Gear, hub	
16	520528	2	• • Bushing	
17	816320	4	• • Screw, wheel mounting	7/16-20 x 1 1/8”
18	522583	1	• O-ring, seal	
19	444762	12	• Nut, crownlock, 3/8-16	
20	523304	1	• Washer, thrust	
21	524147	1	• Nut, seal	
22	310854	1	• Nut, jam, 1-14	
23	522649	2	• O-ring	
24	522576	1	• Tube, housing	

> Change from previous revision

11.1 Brake Components

Serial No. All

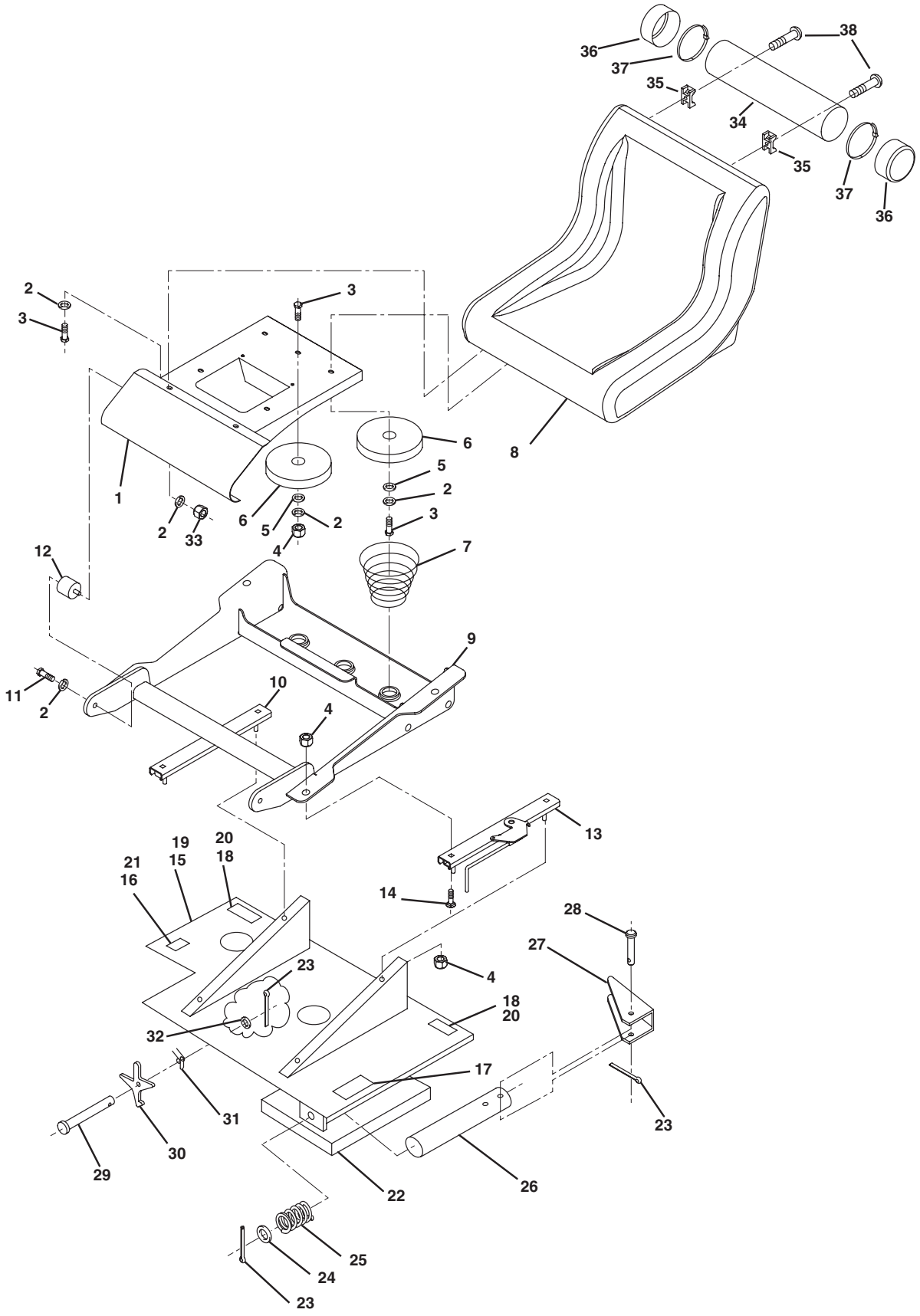


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	540039	1	Cam, brake	
2	453017	1	Washer, 1/2”	
3	444758	2	Nut, centerlock, 1/2-13	
4	460014	2	Pin, cotter, 3/32” x 3/4”	
5	453010	2	Washer, 3/8”	
6	461465	2	Pin, clevis, 3/8” x 1 3/32”	
7	827498	2	Yoke, brake rod	
8	443112	2	Nut, 3/8-24	
9	523202	1	Rod, brake	
10	800177	2	Screw, P.T.H., 5/16-18 x 3/4”	
11	522993	1	Bracket, brake lock	
12	523203	2	Button, brake	
13	444753	1	Nut, lock, 7/16-14	
14	446146	1	Lockwasher, 7/16”	
15	524159	1	Bolt, shoulder	
16	523200	1	Bushing, brake pivot	
17	523211	1	Bracket, retainer	
18	547612	2	Caliper, complete	
19	547613	1	• Lining kit, brake	
20	800527	6	• • Rivet	
21	444742	1	Nut, centerlock, 3/8-16	
22	800784	1	Screw, 1/2-13 x 5 1/2”	
23	516793	1	Bushing	
24	445781	2	Nut, flangelock, 5/16-18	
25	400186	1	Screw, 5/16-18 x 7/8”	
26	453009	1	Washer, 5/16”	
27	111840	1	Washer, wave, 1/2”	
28	823332	1	Bushing, brake pedal	
29	817613	1	Spring, brake return	
30	444718	1	Nut, centerlock, 5/16-18	
31	547566	1	Pedal, brake	
32	523224	1	Bumper, rubber	

> Change from previous revision

12.1 Seat And Base

Serial No. All

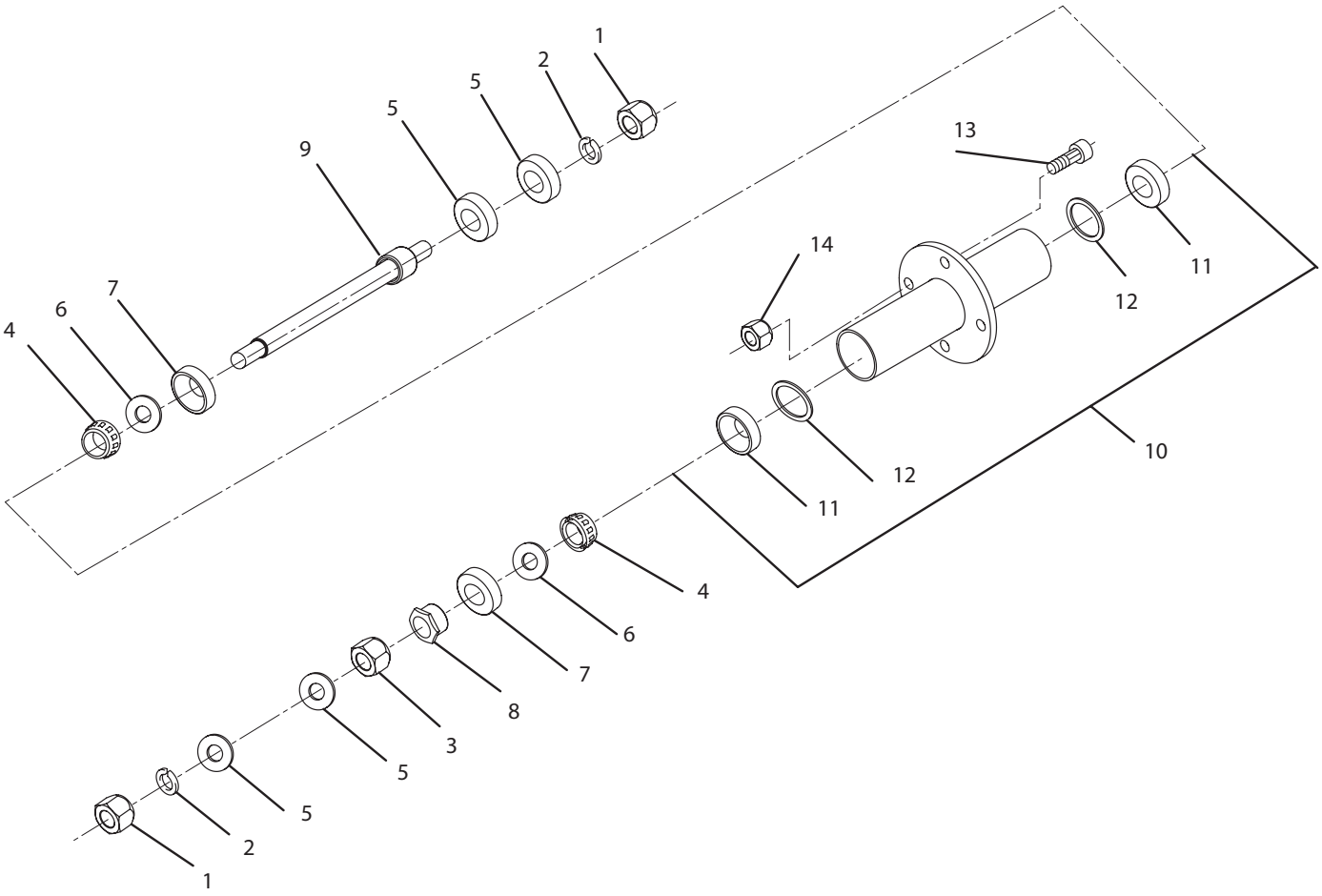


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4116289.7	1	Base, seat upper	
2	446134	9	Lockwasher, 5/16”	
3	400184	5	Screw, 5/16-18 x 3/4”	
4	445795	9	Nut, crownlock, 5/16-18	
5	453009	9	Washer, 5/16”	
6	523167	3	Retainer, spring	
7	523172	3	Spring, compression	
8	547606	1	Seat	
9	4116287.7	1	Base. seat lower	
10	523357	1	Adjuster, seat (right)	
11	400182	2	Screw, 5/16-18 x 5/8”	
12	829148	2	Mount, isolation	
13	523356	1	Adjuster, seat, w/handle (left)	
14	441602	4	Bolt, carriage, 5/16-18 x 3/4”	
15	4116424	1	Seat, base w/decals	Optional English Text Decals
16	523476	1	• Decal, notice-towing instructions	
17	842432	1	• Decal, operating instructions	
18	524728	1	• Decal, chain & belt warning	
19	4116425	1	Seat, base w/decals	Pictogram Decal
20	524738	1	• Decal, caution-hand injury	
21	524686	1	• Decal, towing	
22	524708	1	Insulation, seat deck	
23	460014	3	Pin, cotter, 3/32” x 3/4”	
24	453010	1	Washer, 3/8”	
25	805408	1	Spring, seat pivot	
26	523078	1	Pin, latch	
27	523077	1	Latch	
28	461453	1	Pin, clevis, 3/16” x 1”	
29	830784	1	Pin, clevis, 1/4” x 1 7/8”	
30	523085	1	Bracket, latch	
31	816401	1	Spring, seat latch	
32	453023	1	Washer, 1/4”	
33	443106	2	Nut, 5/16-18 Hex	
34	38541	1	Tube, Document	
35	840508	2	Mount, Cable Tie	
36	38016A	2	Cap, Vinyl	
37	320107	2	Cable tie	
38	403936	2	Screw, #10-32 x 1/2"	

> Change from previous revision

13.1 Front Hub And Axle

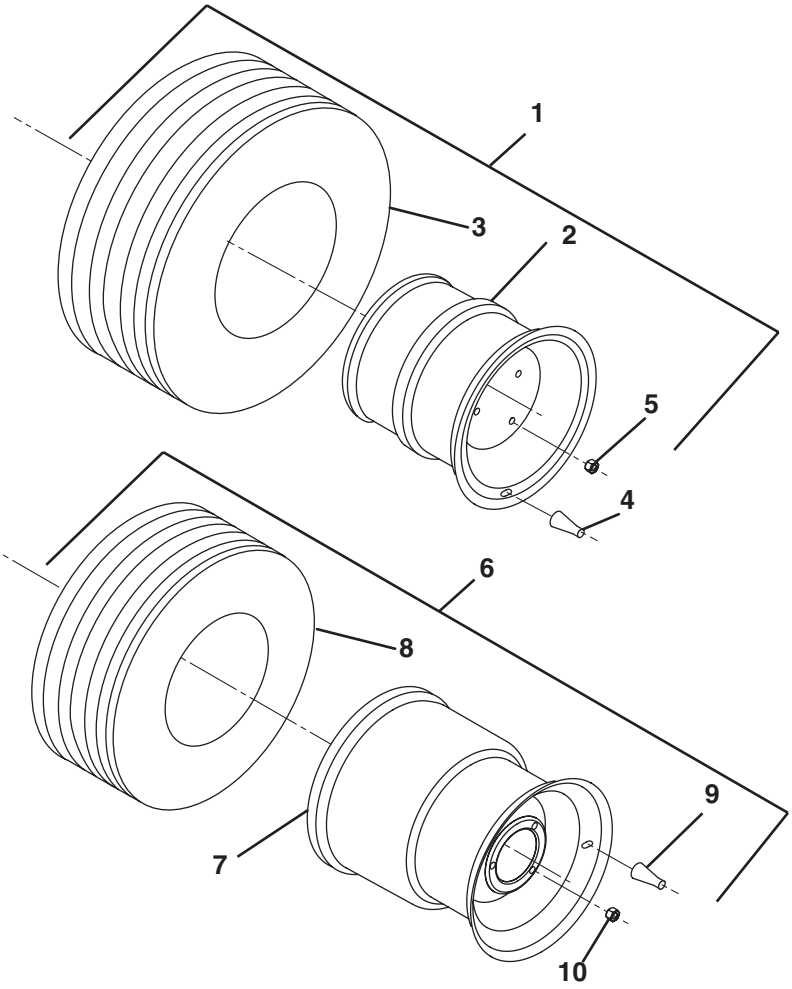
Serial No. All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
	889845	1	Hub and Axle Complete	
1	443828	2	• Nut, jam, 5/8-18	
2	446162	2	• Lockwasher, 5/8”	
3	453018	4	• Washer, thrust, 5/8”	
4	443832	1	• Nut, jam, 3/4-16	
5	836719	1	• Nut, bearing adjustment	
6	836621	2	• Seal, oil	
7	809229	2	• Slinger, grease, 5/8”	
8	385174	2	• Bearing, tapered roller	
9	889843	1	• Axle	
10	889844	1	• Hub, front	
11	808088	2	• • Cup, tapered roller bearing	
12	809268	2	• • Ring, bearing backing	
13	816320	4	• • Screw, wheel mounting	7/16-20 x 1 1/8”
14	805860	4	• • Nut, wheel retaining	7/16-20

> Change from previous revision

14.1 Tire And Wheel

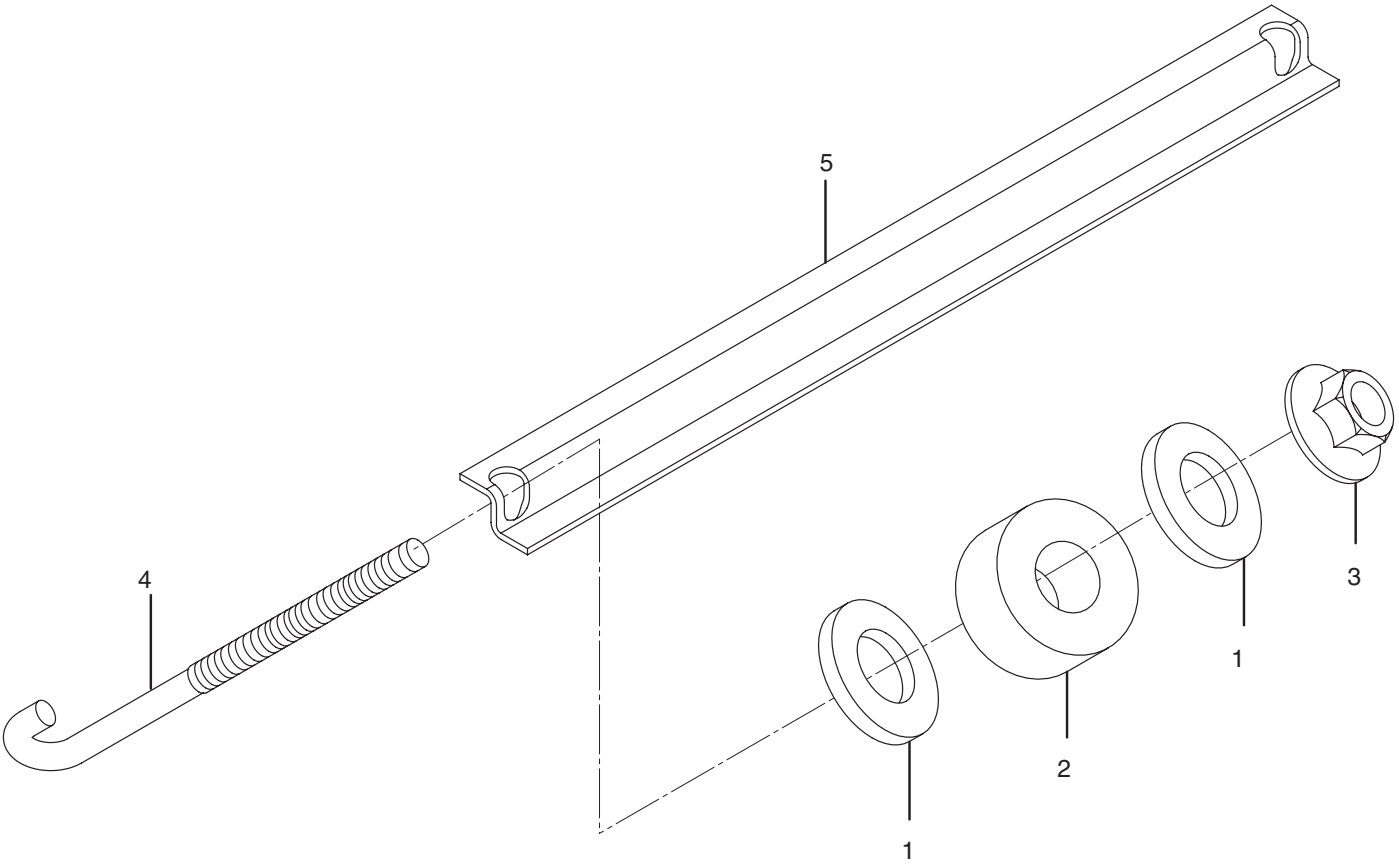


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	547783	2	Tire and wheel set, REAR	
2	547882	1	• Wheel	
3	360346	1	• Tire, 18 x 9.5-8, 4 ply, rib tread	
4	886735	1	• Stem, valve	
5	805860	6	• Nut, wheel retaining, 7/16-20	
6	889878	2	Tire and wheel set, FRONT	
7	815474	1	• Wheel, 8 x 7, 4 on 3 3/4” bolt circle	
8	360346	1	• Tire, 18 x 9.5-8, 4 ply, rib tread	
9	886735	1	• Stem, Valve	
10	805860	6	• Nut, wheel retaining, 7/16-20	
11				
12				
13				
14				
15				

> Change from previous revision

15.1 Battery Hold Down

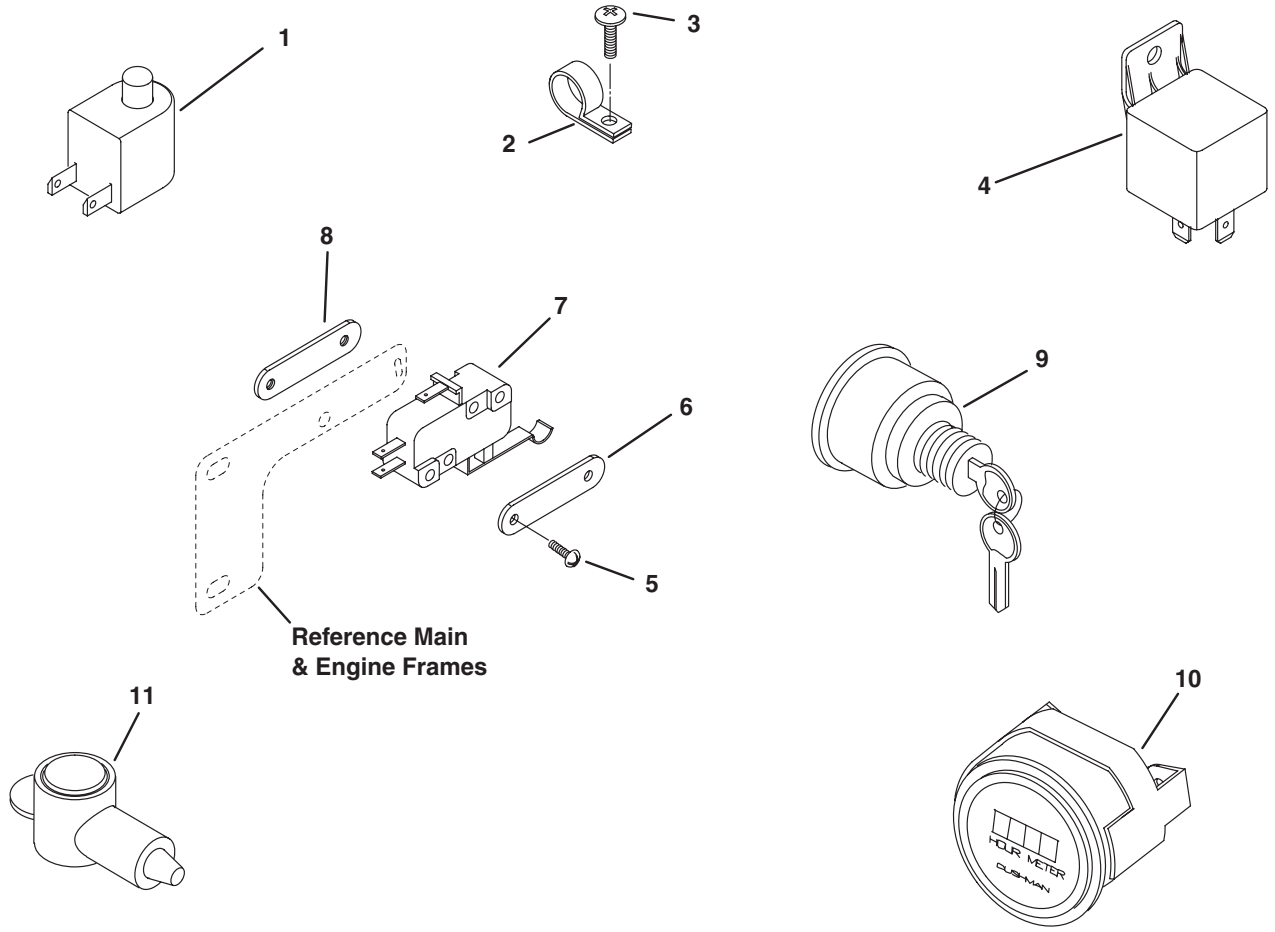
Serial No. All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	453010	4	Washer, 3/8”	
2	818303	2	Spacer, rubber	
3	445795	2	Nut, crownlock, 5/16—18	
4	806953	2	J—bolt, battery	
5	815847	1	Hold down, battery	

> Change from previous revision

16.1 Electrical Components



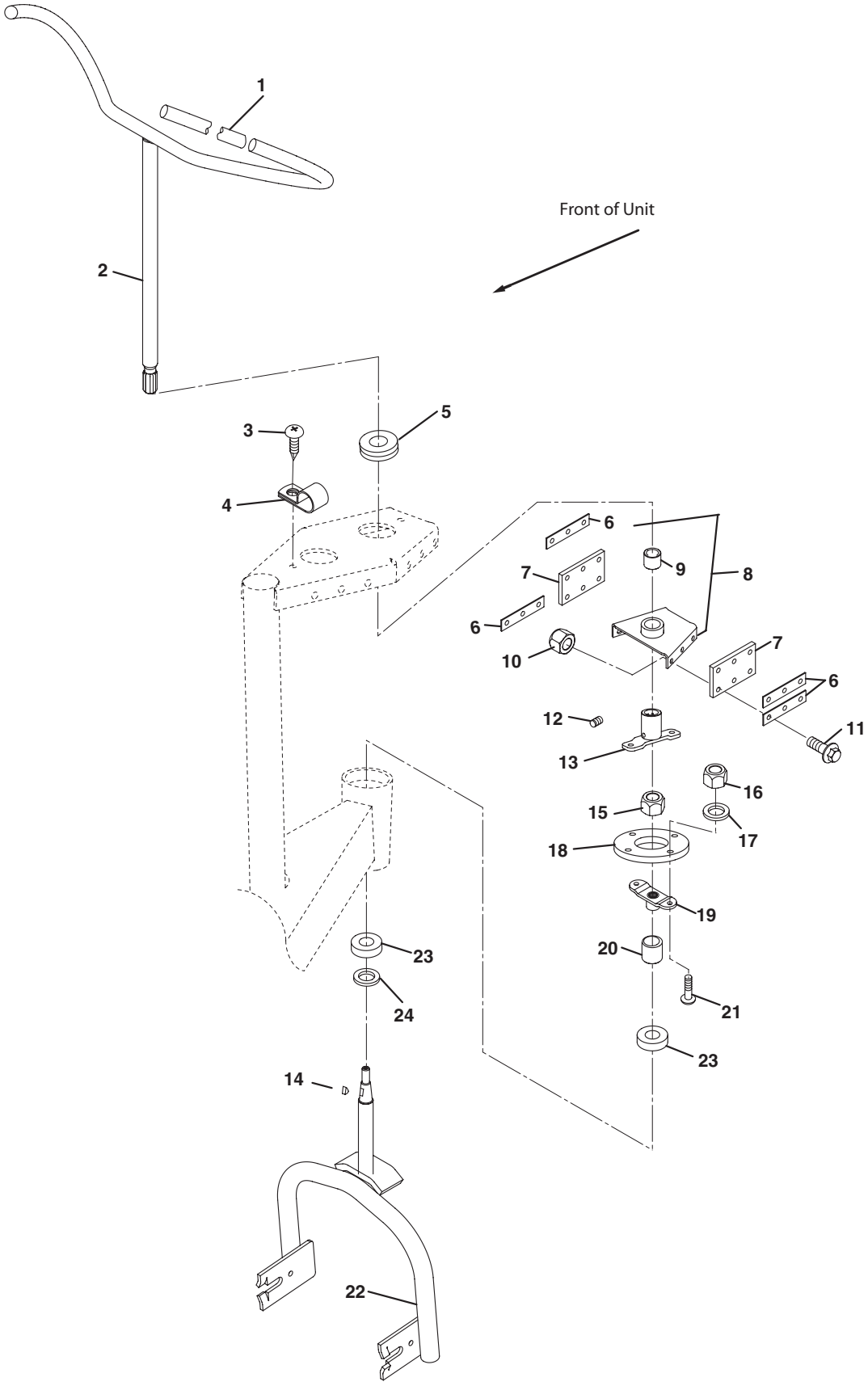
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	158135-01	1	Switch, Seat	
2	814924	1	Clamp	
3	408883	1	Screw, tapping, 1/4 - 20 x 1/2”	
4	843167	2	Relay, 15 AMP	
5	800897	2	Screw, tapping, #4 - 40 x 3/4” P.T.H.	
6	524721	1	Retaining strap	
7	829754	1	Snap action switch	
8	841151	1	Nut, tapping, #4 twin	
9	128010	1	Ignition switch	
10	886802	1	Hour meter	
11	841895	1	Battery terminal cover	
12	540307	1	Wire harness	Not illustrated
13	887687	1	Battery cable, 24” (61 cm)	Not illustrated
14	883078	1	Battery cable, 10” (25 cm)	Not illustrated
15	2700867	1	Relay, 70A	Not illustrated
16	841528	1	Relay, Time Delay	Not illustrated
17	4124956	1	Wire Harness, Seat Switch	Not illustrated

> Change from previous revision

17.1 Steering Components

Serial No. All

Model 88119



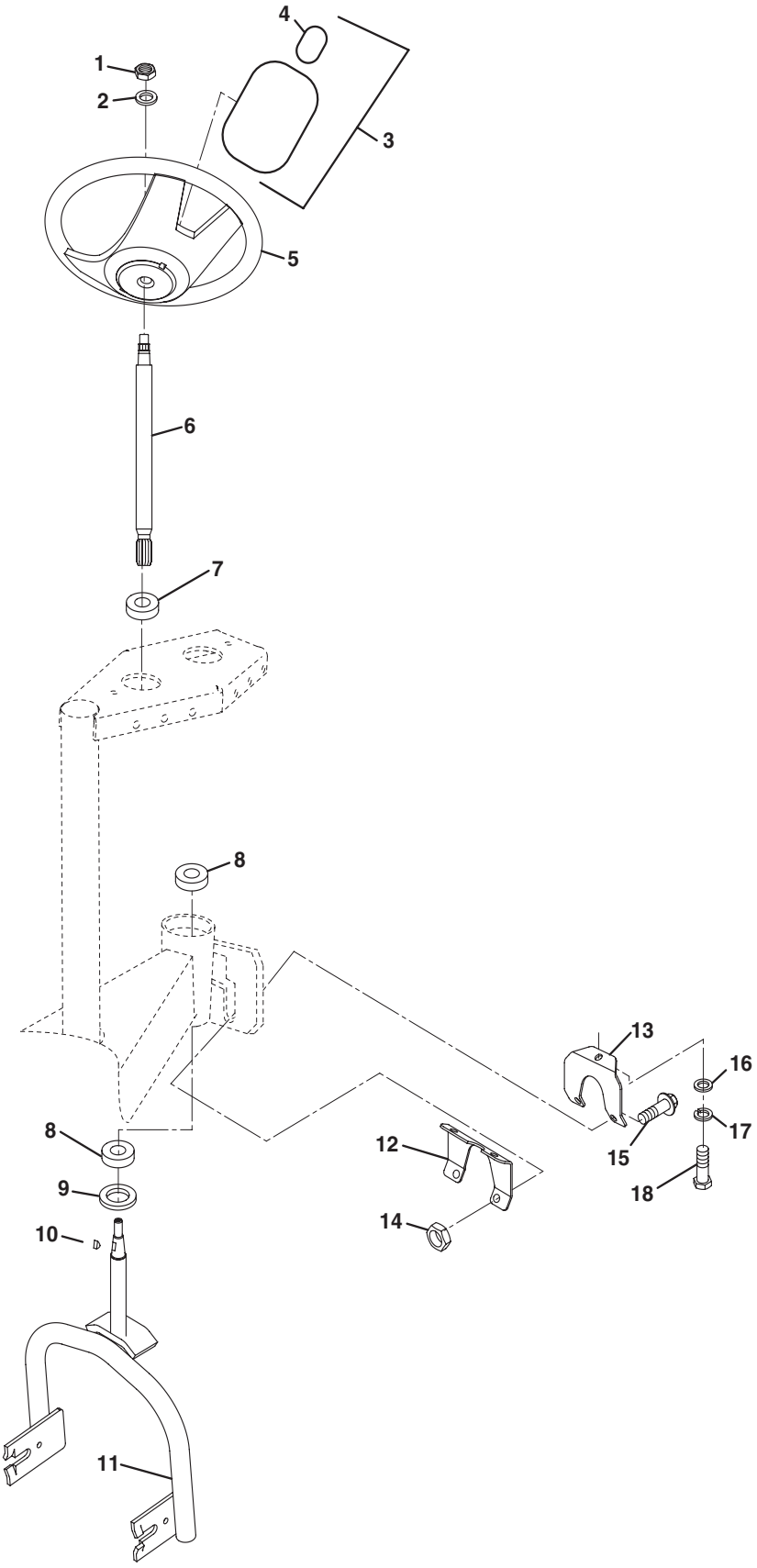
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	522899	2	Grip, hand	
2	4116257.7	1	Handle, steering	
3	408883	1	Screw, tapping, 1/4-20 x 1/2”	
4	814924	1	Clamp, wire	
5	828247	1	Grommet	
6	522969	4	Strip, protection	
7	522970	2	Isolator	
8	547560	1	Steering guide, complete	
9	520528	1	• Bushing	
10	445795	12	Nut, crownlock, 5/16-18	
11	400188	12	Screw, 5/16-18 x 1"	
12	800554	1	Screw, set, 1/4-20 x 5/8”	
13	547672	1	Coupling, steering TOP	
14	463009	1	Key, woodruff, 5/32” x 5/8”	
15	800559	1	Nut, crownlock, 1/2-20	
16	445796	4	Nut, crownlock, 3/8-16	
17	604174	4	Washer, 3/8”	
18	522962	1	Disc, coupler	
19	540334	1	Coupling, Steering	
20	524716	1	Spacer	
21	400264	4	Screw, 3/8-16 x 1 1/4”	Torque to 10 ± 2 ft-lbs
22	540335	1	Yoke, front wheel	
23	832499	2	Bearing, ball	
24	522840	1	Washer, 1”	

> Change from previous revision

18.1 Steering Components

Serial No. All

Model 88118



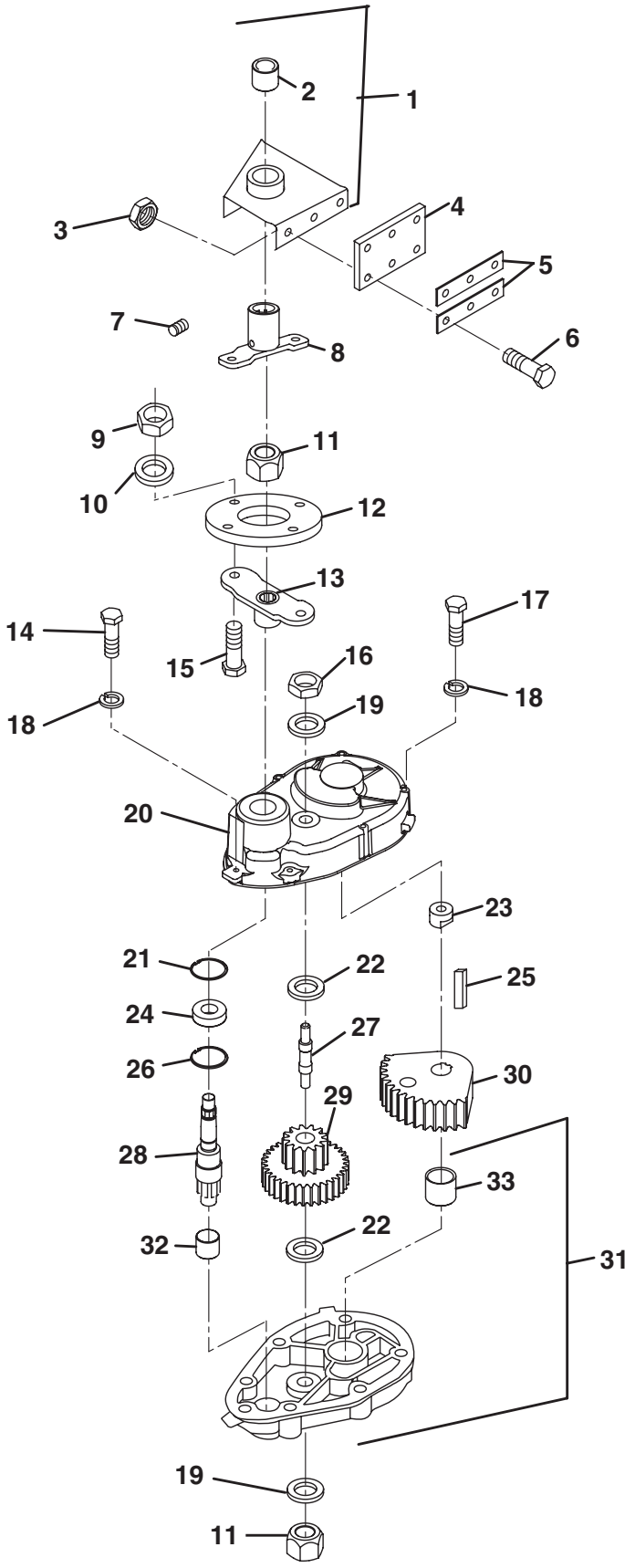
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	443828	1	Nut, 5/8-18	
2	452016	1	Washer, 5/8”	
3	892486	1	Cover and Decal	
4	839862	1	• Decal	
5	892228	1	Wheel, steering	
6	524701	1	Shaft, steering	
7	829997	1	Grommet	
8	832499	2	Bearing, ball	
9	522840	1	Washer, thrust	
10	463009	1	Key, woodruff, 5/32” x 5/8”	
11	540335	1	Yoke, front wheel	
12	539024	1	Support, steering gear, front	
13	539023	1	Support, steering gear, rear	
14	445796	2	Nut, 3/8-16	
15	800709	2	Screw, flangehead, 3/8-16 x 1”	
16	453010	3	Washer, 3/8”	
17	446140	3	Lockwasher, 3/8”	
18	400262	3	Screw, 3/8-16 x 1”	

> Change from previous revision

19.1 Steering Housing

Serial No. All

Model 88118

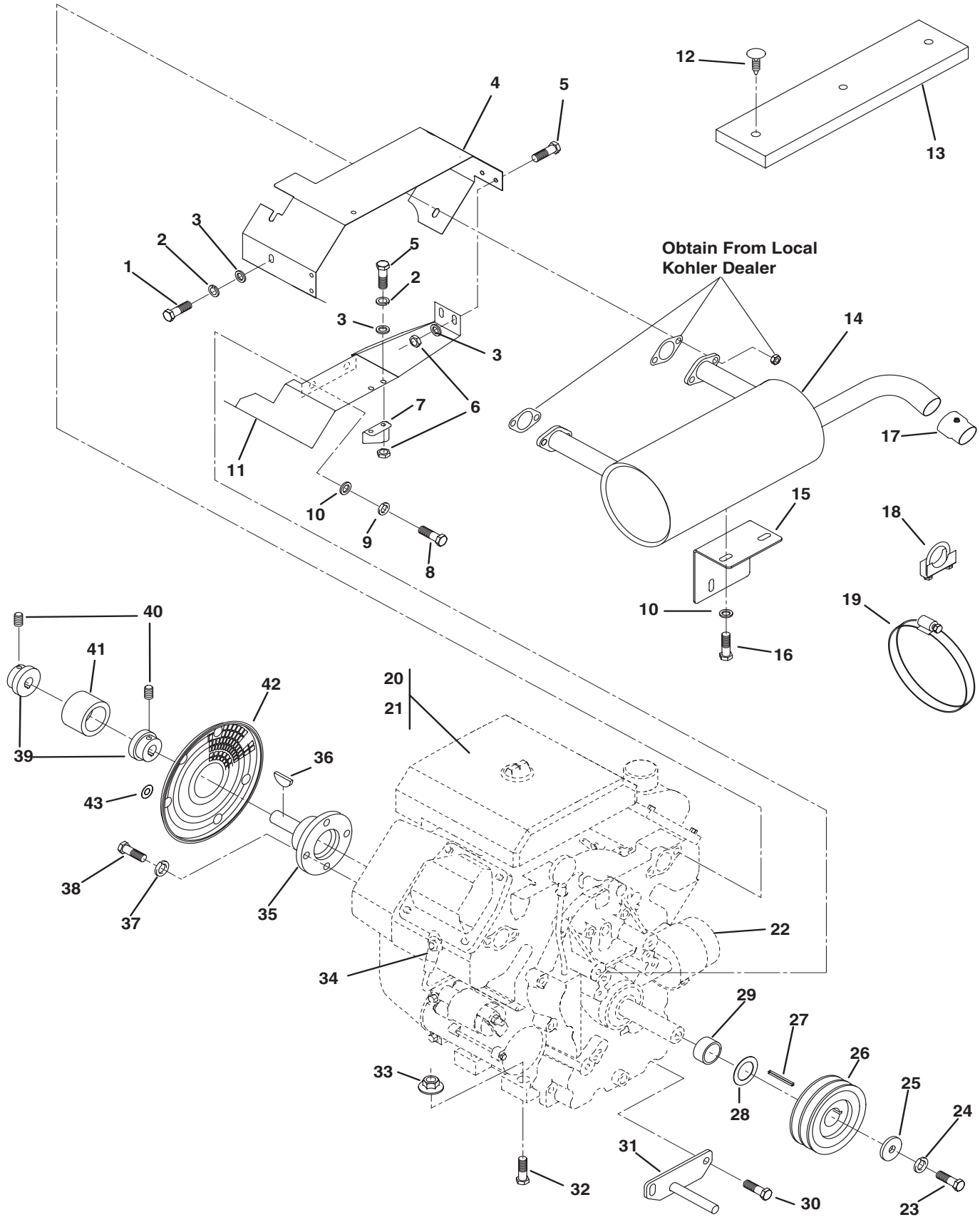


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	547560	1	Guide, Steering	
2	520528	1	• Bushing	
3	445795	12	Nut, 5/16-18	
4	522970	2	Isolator	
5	522969	4	Strip, protection	
6	400188	12	Screw, 5/16-18 x 1”	
7	800554	2	Screw, set, 1/4-20 x 5/8”	
8	547672	1	Coupler, steering TOP	
9	445796	2	Nut, 3/8-16	
10	604174	4	Washer, 3/8”	
11	800612	2	Nut,crownlock, 7/16-20	
12	522962	1	Disc,coupler	
13	547782	1	Coupler, steering BOTTOM	
14	400114	3	Screw, 1/4-20 x 1 1/4”	
15	400264	4	Screw, 3/8-16 x 1 1/4”	
16	800924	1	Nut, 5/8-18, jam	
17	400120	4	Screw, 1/4-20 x 2”	
18	446128	7	Lockwasher, 1/4”	
19	816449	2	Washer, 3/8”	
20	832555	1	Housing, upper	
21	816455	1	Ring, retaining	
22	453011	2	Washer, 7/16”	
23	825672	1	Nut, special, 1/4-20	
24	816456	1	Bearing, Ball	
25	816659	1	Key, 5/32” x 5/32” x 1 1/4	
26	816447	1	Ring, retaining	
27	816452	1	Stud, 7/16-20 x 3.7”	
28	816660	1	Shaft, pinion gear	
29	830168	1	Gear, idler cluster	
30	830167	1	Gear, driven	
31	886883	1	Housing, lower	
32	830370	1	• Bushing	
33	830369	1	• Bushing	

> Change from previous revision

20.1 Engine

Serial No. All

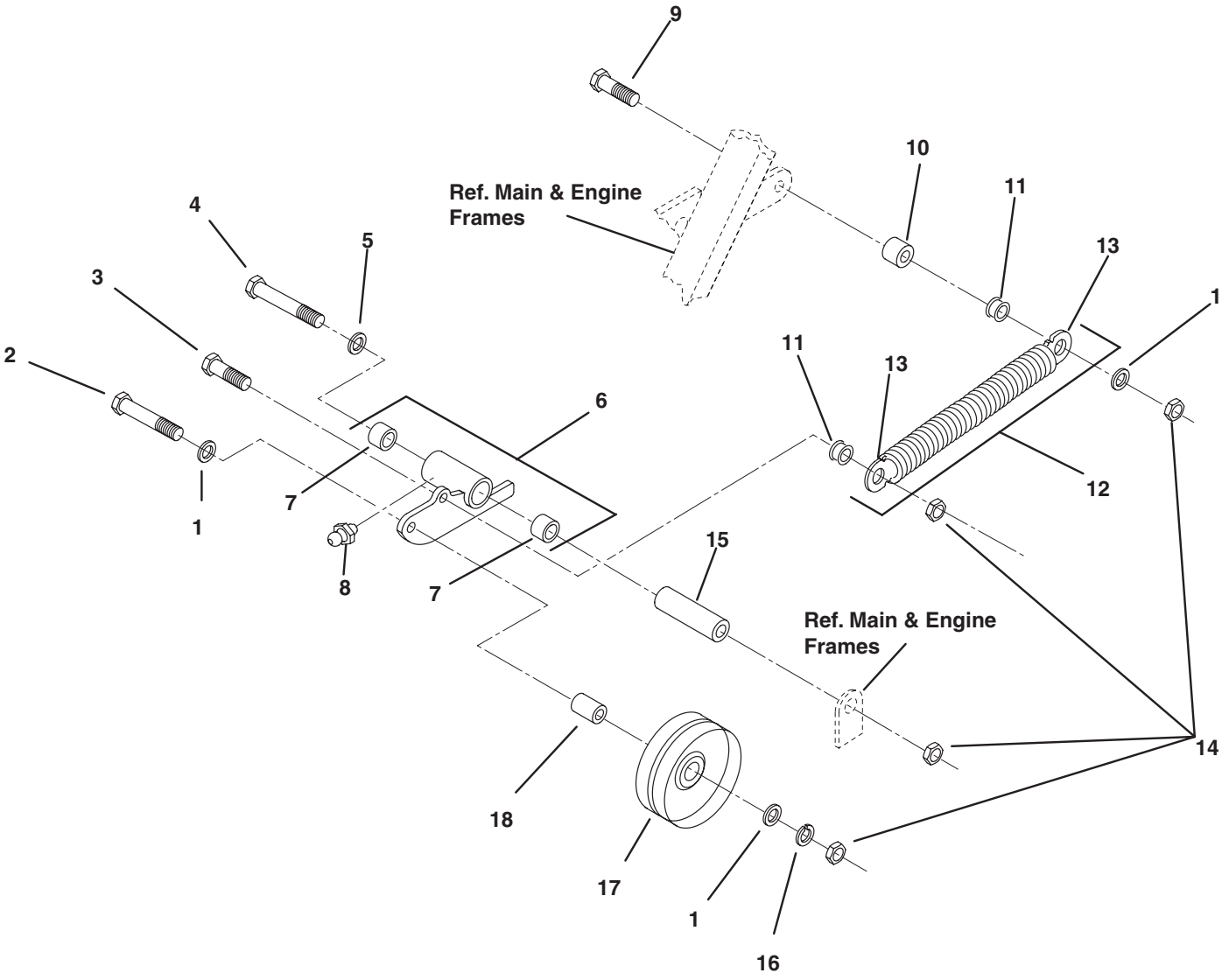


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	828162	2	Screw, M6 - 1 x 16 (Grade 8)	
2	446128	4	Lockwasher, 1/4”	
3	453023	6	Washer, 1/4”	
4	524635	1	Air duct	
5	400108	4	Screw, 1/4 - 20 x 3/4”	
6	443102	4	Nut, 1/4 - 20	
7	524772	1	Belt guide	
8	400258	2	Screw, 3/8 - 16 x 3/4”	
9	446140	2	Lockwasher, 3/8"	
10	453010	4	Washer, 3/8”	
11	842037	1	Belt shield	
12	523282	3	Clip, xmas tree	
13	524723	1	Insulation, shield	
14	540375	1	Muffler	
15	524802	1	Muffler bracket	
16	408858	2	Screw, 5/16 - 18 x 3/4”, tapping	
17	700263	1	Spark arrestor	Accessory
18	818962	1	Exhaust tube clamp	
19	800920	2	Clamp, worm drive, 6 1/2” (17cm)	
20	842513	1	Air pre-cleaner filter, Kohler engine	
21	842509	1	Air cleaner, Kohler engine	
22	842502	1	Oil filter, Kohler engine	
23	515008	1	Screw, 7/16 - 20 x 1”	
24	446146	1	Lockwasher, 7/16”	
25	831106	1	Washer, 7/16”	
26	521680	1	Pulley, 4 1/4” (11cm)	
27	548359	1	Key, 1/4” x 1/4” x 1 3/4”	
28	523317	1	Washer, thrust	
29	523316	1	Spacer	
30	400260	2	Screw, 3/8 - 16 x 7/8”	
31	547547	1	Stop	
32	800477	4	Screw, 3/8 - 16 x 1 3/4”	
33	445783	4	Nut, flangelock, 3/8 - 16	
34	842517	2	Spark plug, Kohler engine	
35	524676	1	Flywheel extension shaft	
36	463017	1	Key, woodruff, 3/16” x 3/4”	
37	446134	4	Lockwasher, 5/16”	
38	800538	4	Screw, M8 - 1.25 x 25 (grade 8)	
39	523239	2	Coupler hub	
40	800274	2	Screw, set, 1/4 -20 x 5/16”	
41	523323	1	Coupler sleeve	
42	524709	1	Screen, Grass	
43	524710	4	Retainer, Push On	

> Change from previous revision

21.1 Idler Pulley

Serial No. All

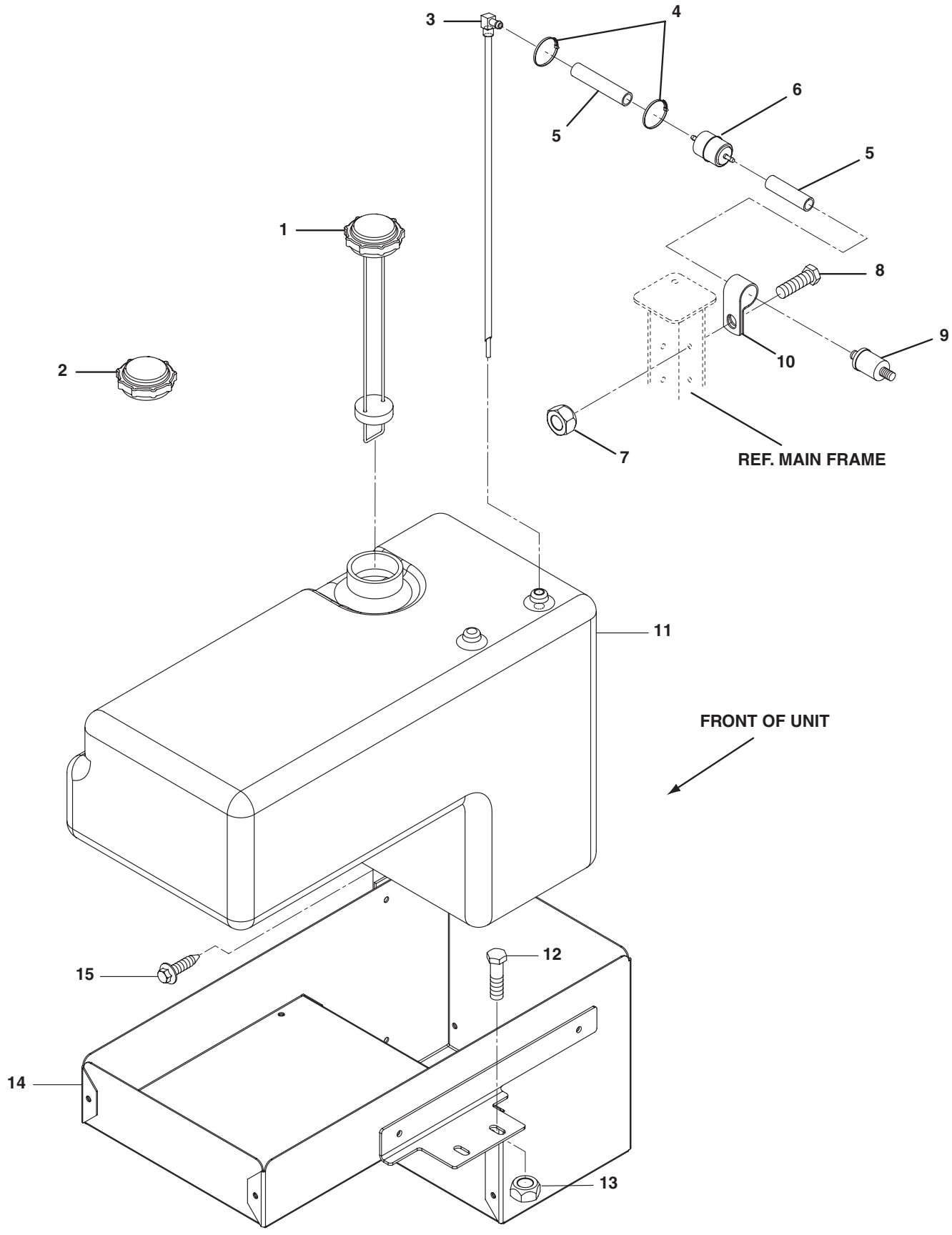


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	453010	3	Washer, 3/8” I.D., 13/16 O.D.	
2	400270	1	Screw, 3/8 -16 x 2”	
3	400264	1	Screw, 3/8 -16 x 1 1/4”	
4	400278	1	Screw, 3/8 -16 x 3 1/2”	
5	604174	1	Washer, 3/8” I.D., 1 1/4 O.D.	
6	547703	1	Complete idler arm	
7	515511	2	• Bushing	
8	807439	1	• Fitting, lubrication, 1/4 - 28	
9	400268	1	Screw, 3/8 -16 x 1 3/4”	
10	808930	1	Bushing, idler spring	
11	523424	2	Bushing, idler spring hook	
12	547670	1	Extension spring	
13	523381	2	• Hook	
14	444742	4	Nut, lock, 3/8 - 16	
15	829270	1	Bushing, idler	
16	446140	1	Lockwasher, 3/8”	
17	522973	1	Idler pulley, 4” (10 cm)	
18	523096	1	Bushing, idler pulley	

> Change from previous revision

22.1 Fuel Tank, Pan, Filter & Hose

Serial No. All

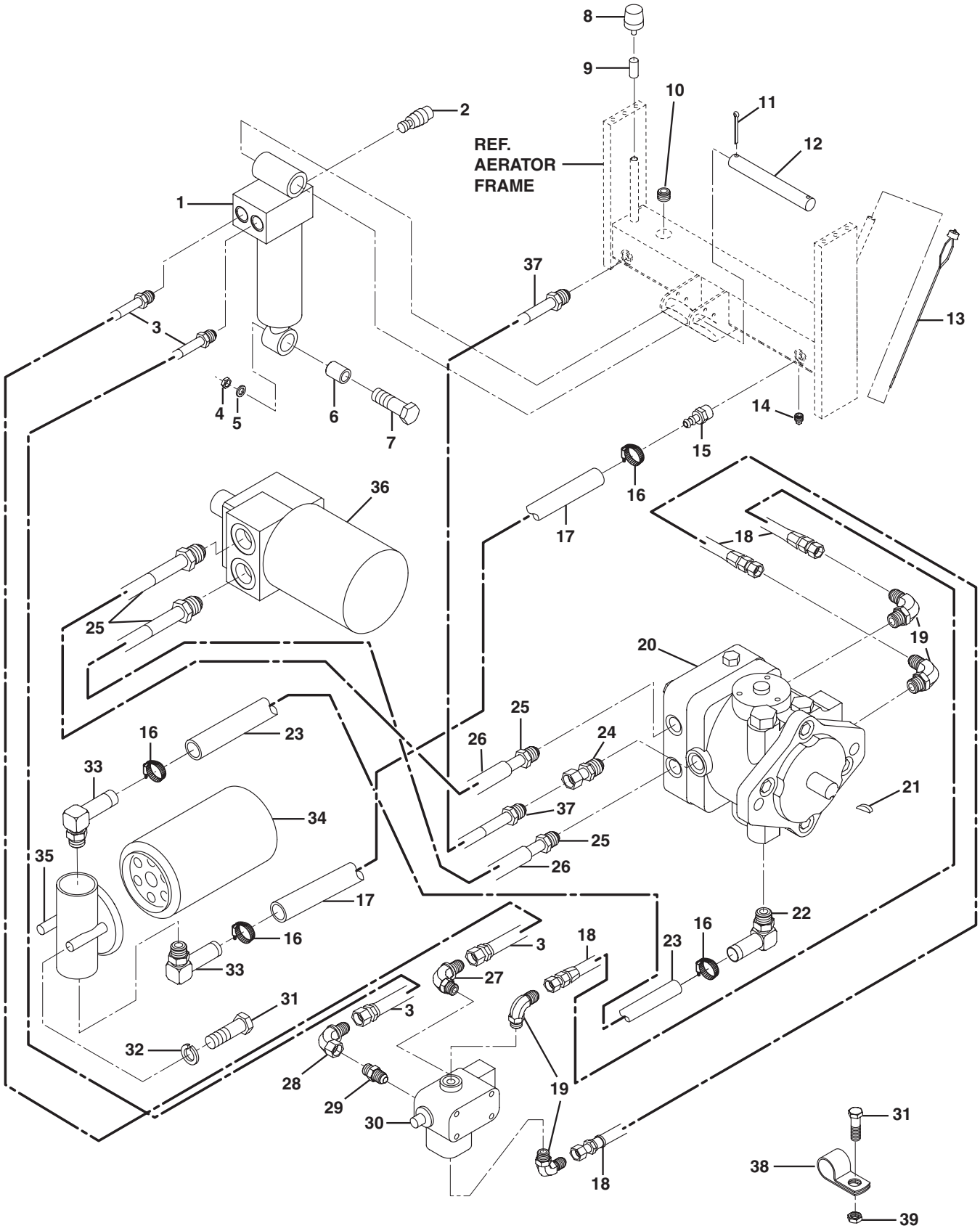


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	831306	1	Cap, fuel w/gauge	
2	833790	1	Cap, fuel	
3	547597	1	Tube, fuel pickup	
4	320107	4	Tie, cable, 7 1/2” (19 cm)	
5	830425	AR	Hose, fuel, 1/4” I.D., 25’ (7.6 M) length	
6	821814	1	Filter, fuel	
7	445794	1	Nut, crownlock, 1/4-20	
8	400108	1	Screw, 1/4-20 x 3/4”	
9	842504	1	Fuel filter, Kohler	
10	825884	1	Clamp, fuel filter	
11	523098	1	Tank, fuel	
12	400186	2	Screw, 5/16-18 x 7/8”	
13	445795	2	Nut, crownlock, 5/16-18	
14	547617	1	Pan, fuel tank	
15	408883	4	Screw, tapping, 1/4-20 x 1/2”	

> Change from previous revision

23.1 Hydraulic System

Serial No. All

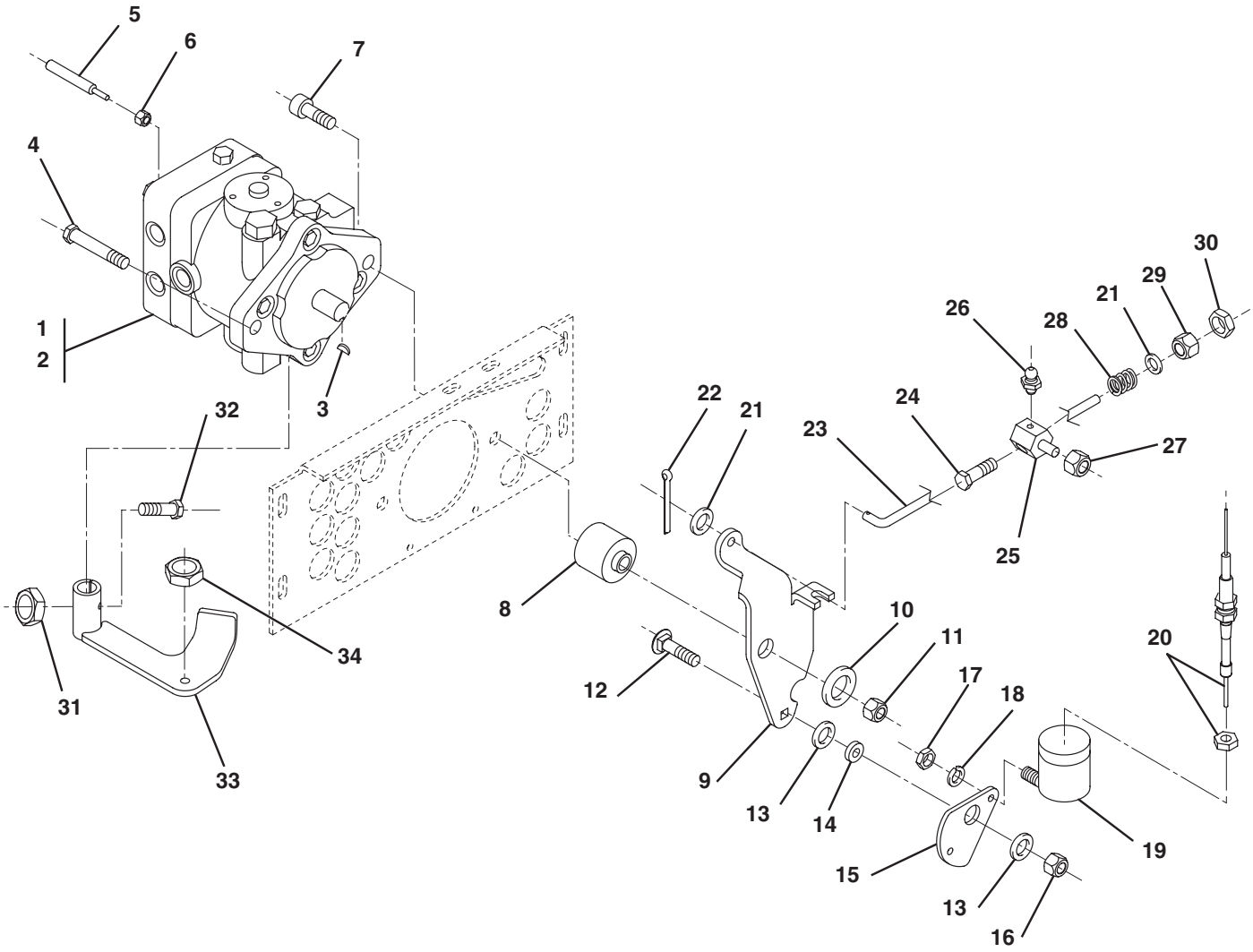


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	540112	1	Cylinder. hydraulic	
	540398	AR	• Kit, seal	Not illustrated.
2	524302	1	Valve, counterbalance	
3	524205	2	Hose, 3/8” I.D. x 42” (107 cm)	
4	444752	1	Nut, lock, 5/8-11	
5	310856	1	Lockwasher, 5/8”	
6	522964	1	Bushing	
7	400624	1	Screw, 5/8-11 x 3”	
8	823587	1	Breather	
9	524221	1	Plug, reservoir vent	
10	800227	1	Plug, 1/2-27 NPT	
11	325109	2	Pin, cotter, 5/32” x 1 3/4”	
12	524164	1	Pin, clevis, lift cylinder	
13	545801	1	Dipstick, reservoir	
14	800113	1	Plug, 1/2-14, NPT	
15	523112	1	Nipple	
16	836206	4	Clamp, hose	
17	524602	1	Hose, 3/4” I.D. x 41” (104 cm)	
18	522113	2	Hose, 3/8” I.D. x 38 3/4” (98 cm)	
19	826558	4	Elbow, 90°	
20	547674	1	Pump, hydraulic	
	547731	AR	• Kit, seal	Not illustrated.
21	463029	1	• Key, woodruff, 3/16” x 5/8”	
22	837753	1	Adapter	
23	869034	1	Hose, 3/4” I.D. x 7 1/2” (91 cm)	
24	523416	1	Adapter, straight	
25	523159	2	Hose, 1/2” I.D. x 21” (53 cm)	
26	840877	2	Sleeve, nylon	1.88” x 22” (4.8 cm x 56 cm)
27	828057	1	Fitting, 90° elbow	
28	828056	1	Fitting, 90° elbow	
29	823118	1	Fitting, hydraulic	
30	884681	1	Valve, hydraulic	
	884599	AR	• Kit, seal	Not illustrated.
31	400108	4	Screw, 1/4-20 x 3/4”	
32	446128	2	Lockwasher, 1/4”	
33	523768	2	Adapter, 90° elbow	
34	522972	1	Filter, oil	
35	547818	1	Head, filter	
36	524811	1	Motor, hydraulic	
	540400	AR	• Kit, seal	Not illustrated.
37	523345	1	Hose, 5/8” I.D. x 48” (122 cm)	
38	814924	2	Clamp	
39	445794	2	Nut, lock, 1/4-20	

> Change from previous revision

24.1 Hydrostat Linkage

Serial No. All

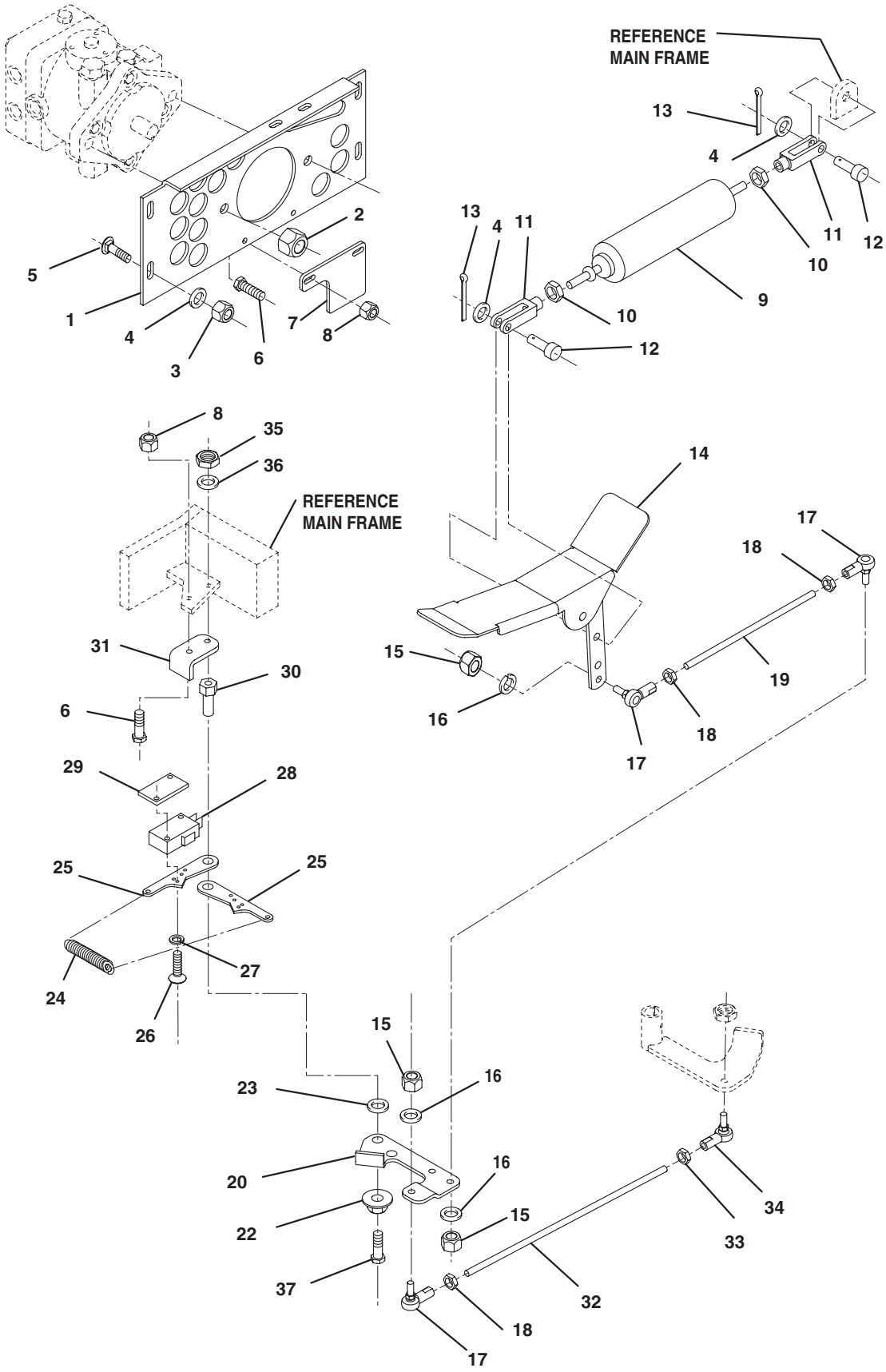


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	547674	1	Hydrualic pump, complete	
2	547731	1	• Kit, seal	
3	463029	1	• Key, woodruff, 3/16” x 5/8”	
4	400408	1	Screw, 1/2-13 x 1 1/2”	
5	539021	1	Arm, pump relief	
6	548973	1	Nut, lock, #10-24	
7	800560	1	Screw, 1/2-13 x 3 1/2” (grade 8)	
8	523411	1	Bushing, shoulder	
9	523412	1	Arm, spacing cam	
10	831783	1	Washer, cam pivot, 1/2”	
11	444758	1	Nut, crownlock, 1/2-13	
12	440082	1	Bolt, carriage, 5/16-18 x 1”	
13	452006	2	Washer, 5/16”	
14	523038	1	Bushing	
15	523037	1	Cam, speed control	
16	445795	1	Nut, crownlock, 5/16-18	
17	443104	1	Nut, 1/4-28	
18	446128	1	Lockwasher, 1/4”	
19	831518	1	Ball joint, control rod	
20	523049	1	Cable, shifter	
21	453009	2	Washer, 5/16”	
22	460014	1	Pin, cotter, 3/32” x 3/4”	
23	524160	1	Rod, spacing control	
24	524453	1	Screw, adjusting	
25	524471	1	Connector, rod	
26	2702168	1	Fitting, lubrication, 1/4-28	
27	445796	1	Nut, crownlock, 3/8-16	
28	524083	1	Spring, spacing control	
29	443108	1	Nut, 5/16-24	
30	548049	1	Nut, crownlock, 5/16-24	
31	445794	1	Nut, crownlock, 1/4-20	
32	400116	1	Screw, 1/4-20 x 1 1/2”	
33	547680	1	Arm, pump	
34	800716	1	Nut, crownlock, 5/16-24	

> Change from previous revision

25.1 Hydrostat Linkage

Serial No. All

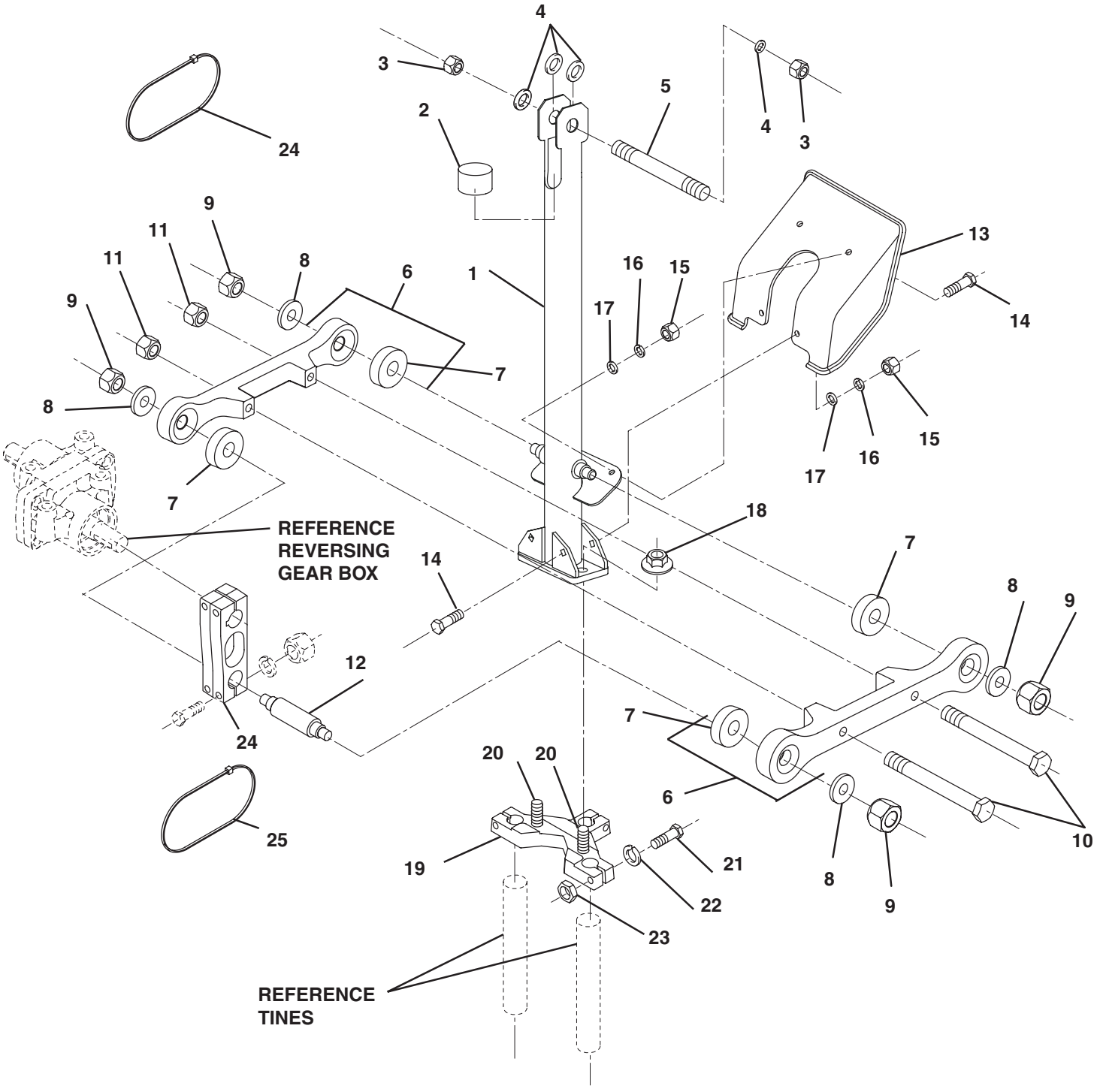


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	523415	1	Plate, pump mounting	
2	445771	1	Nut, stop, 1/2-13	
3	445796	4	Nut, crownlock, 3/8-16	
4	453010	6	Washer, 3/8”	
5	440118	4	Bolt, carriage, 3/8-16 x 1”	
6	400108	3	Screw, 1/4-20 x 3/4”	
7	523410	1	Bracket, linkage stop	
8	445794	3	Nut, crownlock, 1/4-20	
9	523473	1	Absorber, shock	
10	443112	2	Nut, 3/8-24	
11	827498	2	Yoke, adjustable end	
12	461465	2	Pin, clevis, 3/8” x 1 3/32”	
13	460014	2	Pin, cotter, 3/32” x 3/4”	
14	547614	1	Pedal, directional	
15	800716	3	Nut, crownlock, 5/16-24	
16	446134	3	Lockwasher, 5/16”	
17	831586	3	Ball joint, control rod	
18	443108	3	Nut, 5/16-24	
19	523115	1	Rod, pedal to stop	
20	547738	1	Bellcrank, conplete	
21	523497	1	• Arm, neutral	
22	800559	1	• Nut, crownlock, flange, 1/2-20	
23	809180	1	• Washer, 1/2”	
24	817598	1	• Spring	
25	827320	2	• Arm, control	
26	888503	1	• Screw service, set	
		2	• • Screw, #4-40 x 3/4” (rd hd)	Not offered separately
		2	• • Screw, #4-40 x 1” (rd hd)	Not offered separately
		2	• • Screw, #4-40 x 1 3/4” (rd hd)	Not offered separatley
27	447002	4	• Lockwasher, #6, external tooth	
28	830139	2	• Switch, snap action	
29	841151	2	• Nut, #4-40 Tapping	
30	523492	1	• Bushing	
31	827316	1	Stop, neutral control arm	
32	523419	1	Rod, stop to pump	
33	800543	1	Nut, 5/16-24 (left handed thread)	
34	523253	1	End, rod (left handed thread)	
35	445795	1	Nut, crownlock, 5/16-18	
36	453009	1	Washer, 5/16	
37	400200	1	Screw, 5/16-18 x 2 1/2”	

> Change from previous revision

26.1 Tine Rams And Components

Serial No. All

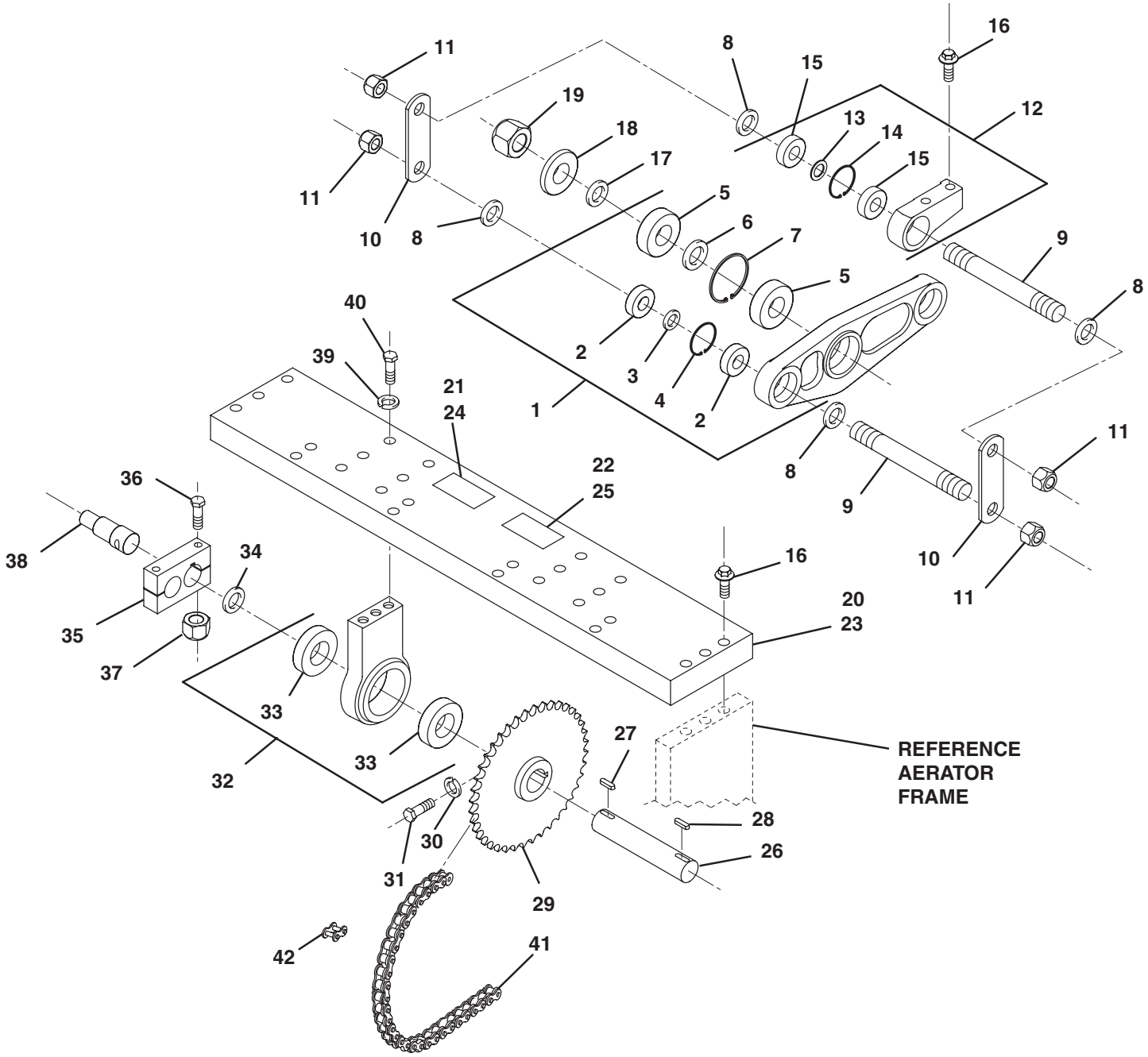


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4116624.7	4	Ram, tine	
2	523297	4	Plug, tine arm	
3	800509	8	Nut, stop 5/8-18	Torque to 145 ± 10 ft-lbs.
4	522839	16	Washer, thrust (.062 thick)	
5	522836	8	Pin, linkage	
6	889447	8	Link, return	
7	832498	2	• Bearing, ball	
8	523222	16	Washer, thrust (.062 x .531 x 1”)	
9	444780	16	Nut, lock, 1/2-20	Torque to 70 ± 5 ft-lbs.
10	401229	8	Screw, 3/8-16 x 4 1/4”	
11	444742	8	Nut, lock, 3/8-16	
12	522857	4	Pin, pivot	
13	522952	4	Deflector, core	
14	800026	16	Screw, P.T.H., 1/4-20 x 3/4”	
15	445794	16	Nut, lock, 1/4-20	
16	446128	16	Lockwasher, 1/4”	
17	453023	16	Washer, 1/4”	
18	800559	8	Nut, lock, 1/2-20	
19	4116255.7	4	Holder, tine, 5/8” (19mm)	
20	523474	8	• Screw, 1/2-20 x 1 13/16”	Grade 8
21	400230	12	Screw, 5/16-24 x 1 1/2”	Grade 8
22	446134	12	Lockwasher, 5/16”	
23	444754	12	Nut, 5/16-24	
24	522858	4	Link, vertical	
25	823549	2	Tie, cable, 15 1/2” (39 cm)	

> Change from previous revision

27.1 Tine Rams And Components

Serial No. All

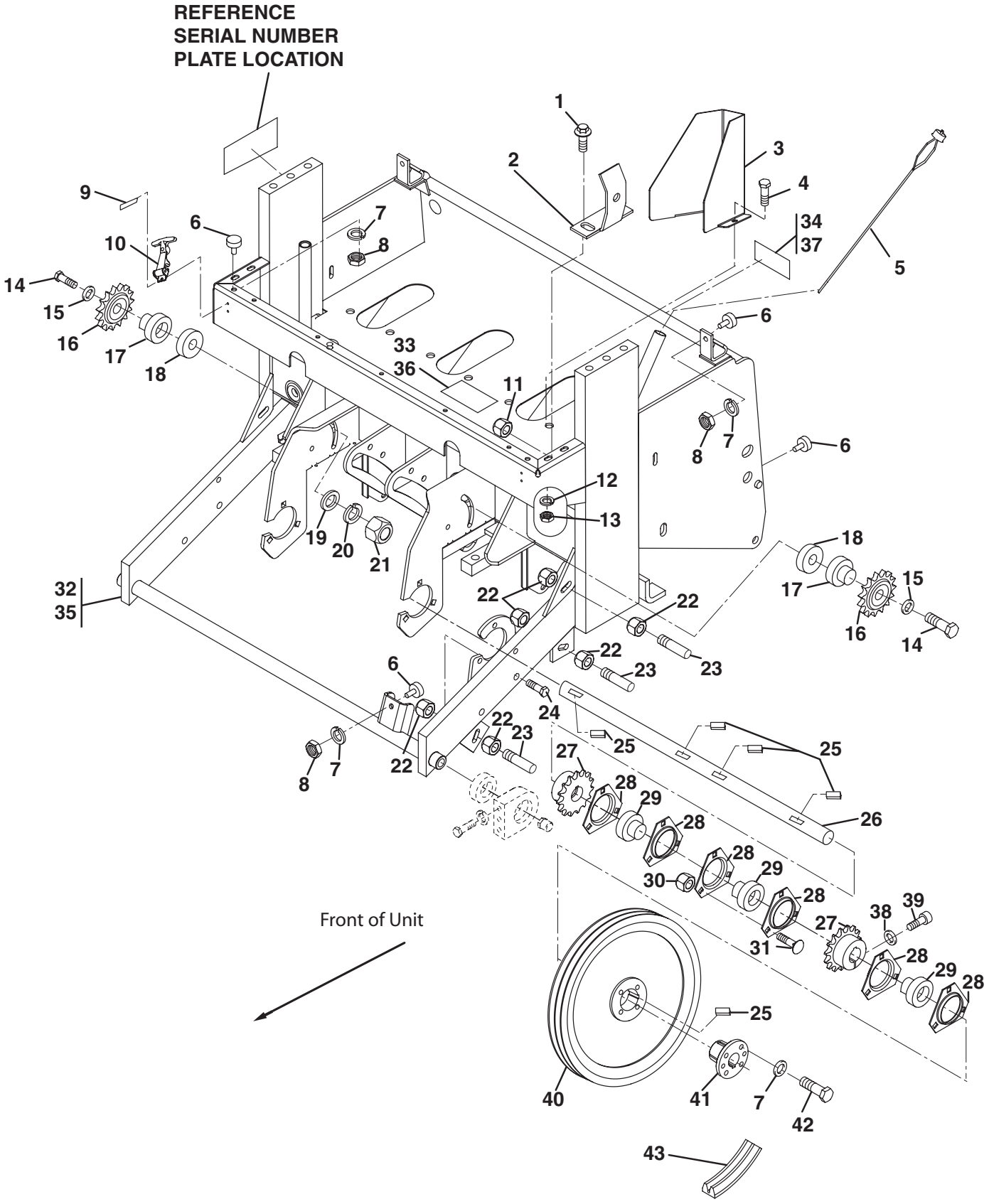


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	890543	4	Arm, pitman	
2	832498	4	• Bearing, ball	
3	522839	2	• Washer, thrust (.062 x .67 x 1.06”)	
4	548325	2	• Ring, lock	
5	832499	2	• Bearing, ball	
6	522840	1	• Washer, thrust (.083 x 1x 1.28”)	
7	548355	1	• Ring, retaining	
8	522839	16	Washer, thrust (.062 thick)	
9	522836	8	Pin, linkage	
10	4116498.7	8	Link, rocker	
11	800509	16	Nut, stop, 5/8-18	Torque to 145 ± 10 ft-lbs.
12	4116647.7	4	Pivot, rocker	
13	522839	1	• Washer, thrust	
14	548325	1	• Ring, lock	
15	832498	2	• Bearing, ball	
16	800594	14	Screw, 1/2-20 x 1 1/4” flangehead	Grade 8, Torque to 70 ± 5 ft-lbs.
17	831096	4	Washer, thrust	
18	523234	4	Washer, thrust (.083 x 1 x 1.28”)	
19	800508	4	Nut, stop, 3/4-16	Torque to 145 ± 10 ft-lbs.
20	4116790	1	Plate, top w/ decals	Optional English Text Decals
21	524729	1	• Decal, Crushing warning	
22	524728	1	• Decal, chain & belt warning	
23	4116791	1	Plate, top w/ decals	Pictogram Decals
24	524742	1	• Decal, hand crush warning	
25	524738	1	• Decal, hand injury caution	
26	522847	2	Shaft, crank	
27	523184	2	Key, 1/4 x 1/4 x .845”	
28	523185	2	Key, 1/4 x 1/4 x 1.470”	
29	889115	2	Sprocket, crank	
30	446136	2	Lockwasher, 5/16”	
31	434016	2	Screw, 5/16-18x1 1/4” , socket head	Grade 8
32	4116503.7	4	Support, crankshaft	
33	523127	2	• Bearing, ball	
34	522841	4	Washer, thrust (.032 thick)	
35	522838	4	Arm, crank	
36	400324	8	Screw, 3/8-24 x 2 3/4”	Grade 8
37	444744	8	Nut, 3/8-24 crownlock	Grade 8
38	522837	4	Pin, crank	
39	446146	12	Lockwasher, 7/16	
40	800550	12	Screw, 7/16-14 x 2 1/4”	Grade 8, Torque to 70 ± 5 ft-lbs.
41	547886	2	Chain, #50 sealed roller w/connector	
42	522123	1	• Connector, #50 sealed	
43	523248	1	Lubricant, chain	Not illustrated

> Change from previous revision

28.1 Aerator Frame

Serial No. All

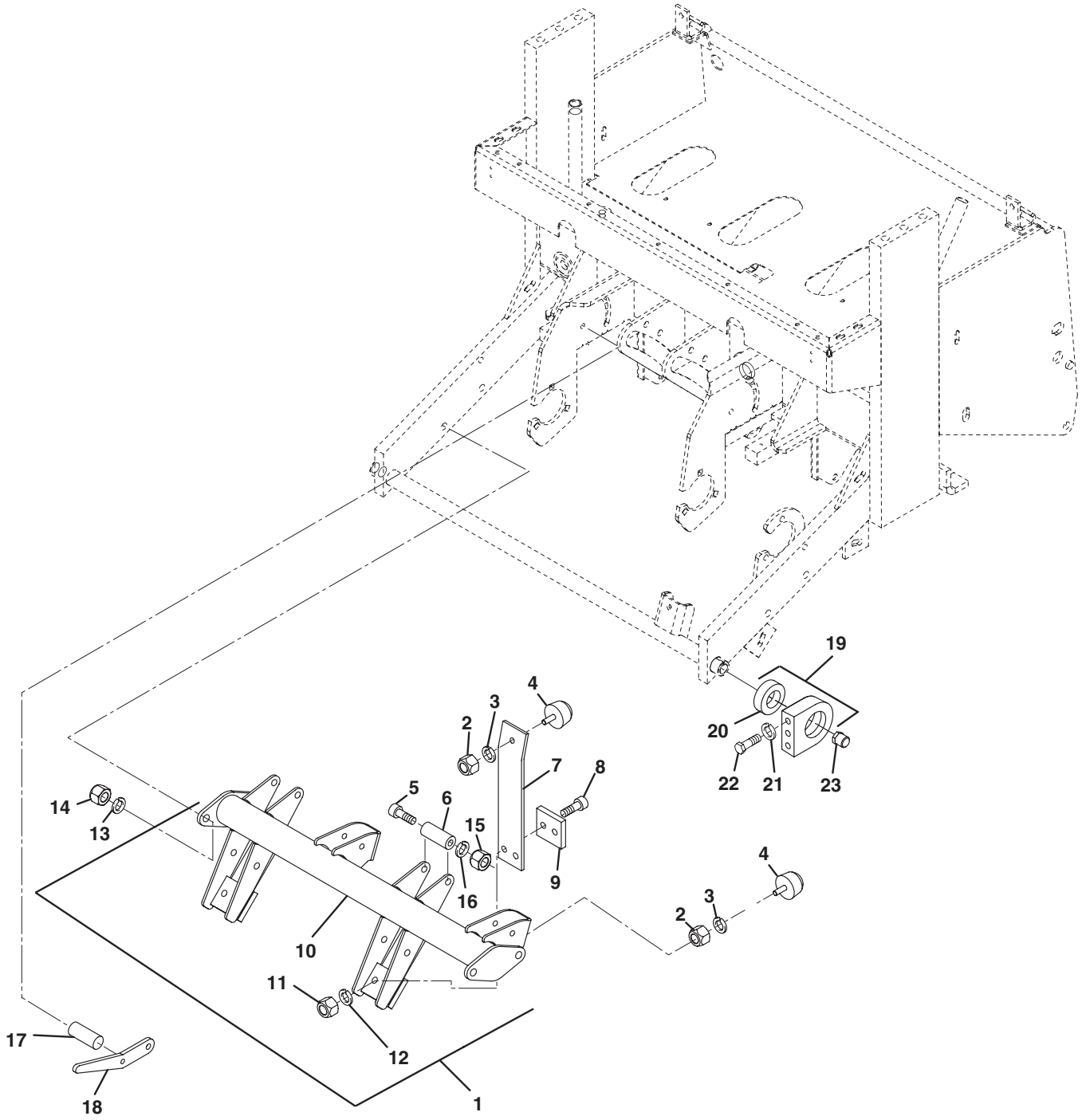


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	800794	4	Screw, 5/16-18 x 3/4”	Model 88118
2	4116860.7	2	Guide, cover	Model 88118
3	4116482.7	2	Shield	
4	400108	4	Screw, 1/4-20 x 3/4”	
5	540151	1	Dipstick, reservoir	
6	523224	5	Bumper, rubber	
7	446134	9	Lockwasher, 5/16”	
8	443106	5	Nut, 5/16”-18	
9	800390	4	Rivet, pop, 1/8” x 3/8”	
10	888102	2	Handle, latch	
11	445781	4	Nut, 5/16”-18	
12	446128	4	Lockwasher, 1/4”	
13	444708	4	Nut, lock, 1/4”-20	
14	131794	2	Screw, 3/8-16 x 2”	
15	548155	2	Washer, 5/16”	
16	547596	2	Sprocket, idler, 15T - 5/8P	
17	523100	2	Bushing	
18	515390	2	Retainer	
19	453010	1	Washer, 3/8”	
20	446140	2	Lockwasher, 3/8”	
21	444742	2	Nut, lock, 3/8-16	
22	443810	6	Nut, 3/8”-16	
23	523215	3	Stud, belt guide	
24	400340	6	Screw, 7/16-14 x 1 3/4” (grade 8)	
25	523184	4	Key, 1/4” x 1/4” x .845	
26	547807	1	Shaft	
27	522889	2	Sprocket, 15T - 5/8P	
28	522723	6	Flange, bearing	
29	545786	3	Bearing, complete	
30	445781	9	Nut, lock, 5/16-18	
31	441602	9	Bolt, carriage, 5/16-18 x 3/4”	
32	4116806	1	Frame, aerator w/ decals	Optional English Text Decals
33	524727	1	• Decal, warning	
34	524730	1	• Decal, warning	
35	4116807	1	Frame, aerator w/ decals	Pictogram Decals
36	524743	1	• Decal, warning	
37	524741	1	• Decal, warning	
38	446136	2	Lockwasher, 5/16	
39	434016	2	Screw, 5/16-18 x 1 1/4” (grade 8)	
40	4116481.7	1	Pulley, 12” (305 mm) 2 groove	
41	520856	1	Hub	
42	400190	4	Screw, 5/16-18 x 1 1/4”	
43	522887	1	Belt, drive 2V	

> Change from previous revision

29.1 Aerator Frame

Serial No. All

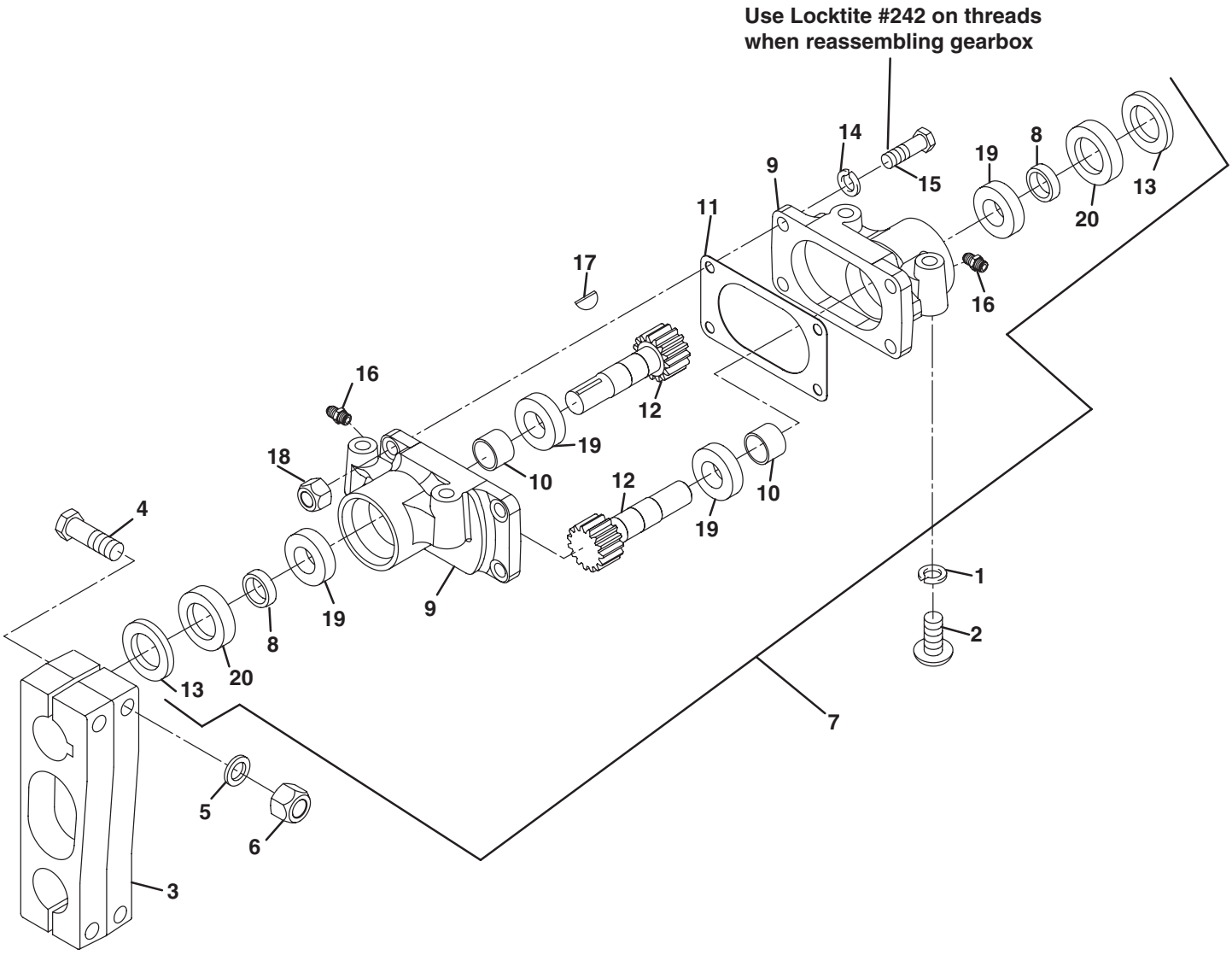


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4116518.7	1	Bumper, return	
2	443106	4	• Nut 5/16-18	
3	446134	4	• Lock washer, 5/16”	
4	523126	4	• Bumper, rubber	
5	400276	2	• Screw, 3/8-16 x 3”	
6	523349	2	• Bushing	
7	523346	2	• Spring	
8	400266	4	• Screw, 3/8-16 x 1 1/2”	
9	523348	2	• Pad	
10	4116519.7	1	• Arm, stop	
11	444742	6	• Nut, lock, 3/8-16	
12	446140	6	• Lock washer, 3/8”	
13	446146	4	Lock washer, 7/16”	
14	548046	4	Nut, lock, 7/16-14	
15	443810	4	Nut, 3/8-16	
16	446140	4	Lock washer, 3/8”	
17	316946	2	Pin, spiral, 5/16” x 7/8”	
18	4116256.7	2	Lever, adjusting	
19	4116516.7	2	Pivot, frame	
20	832499	1	• Bearing, ball	
21	446146	6	Lock washer, 7/16”	
22	400340	6	Screw, 7/16-14 x 1 3/4” (grade 8)	
23	523431	2	Plug	

> Change from previous revision

30.1 Reversing Gearbox & Vertical Links

Serial No. All

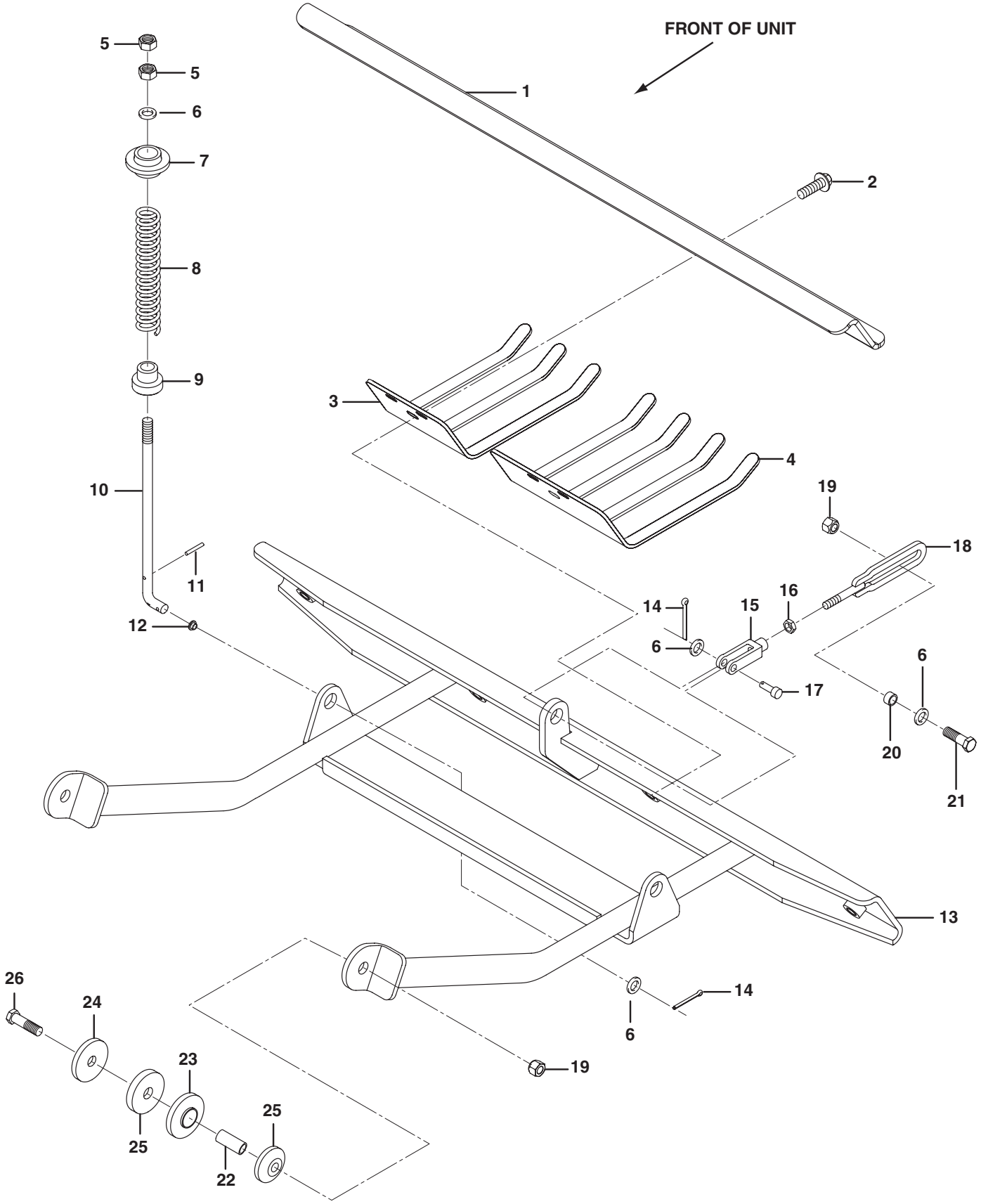


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	446146	4	Lockwasher, 7/16”	
2	800444	4	Screw, 7/16—14 x 2 1/2” (grade 8)	
3	522858	1	Link, vertical	
4	400198	4	Screw, 5/16—18 x 2 1/4”	
5	446134	4	Lockwasher, 5/16”	
6	548048	4	Nut, lock, 5/16—18	
7	4116250.7	1	Gearbox, reversing	
8	522747	2	• Spacer, gearbox	
9	522807	2	• Case, reversing gearbox	
10	522991	2	• Spacer	
11	522992	1	• Gasket, reversing gearbox	
12	523104	2	• Shaft, rocker	
13	523240	2	• Washer, thrust	
14	446140	4	• Lockwasher, 3/8”	
15	400300	4	• Screw, 3/8—24 x 1 1/4” (grade 8)	
16	800227	2	• Plug, pipe, 1/8—27 NPT	
17	463040	2	• Key, 1/4” x 1 1/4”	
18	444744	4	• Nut, crownlock, 3/8—24	
19	815093	4	• Bearing, ball	
20	831024	2	• Seal, oil	

> Change from previous revision

31.1 Turf Guard

Serial No. All

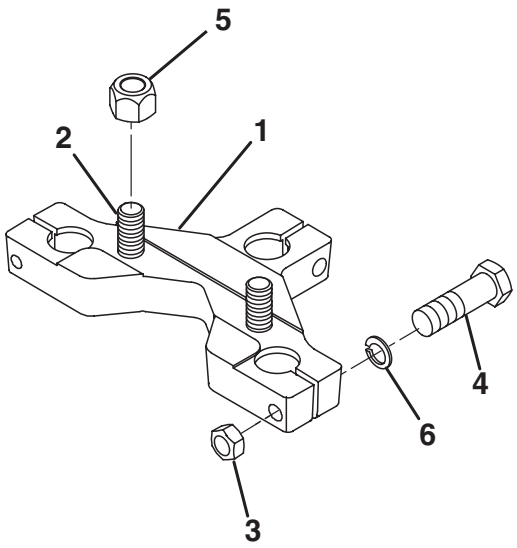


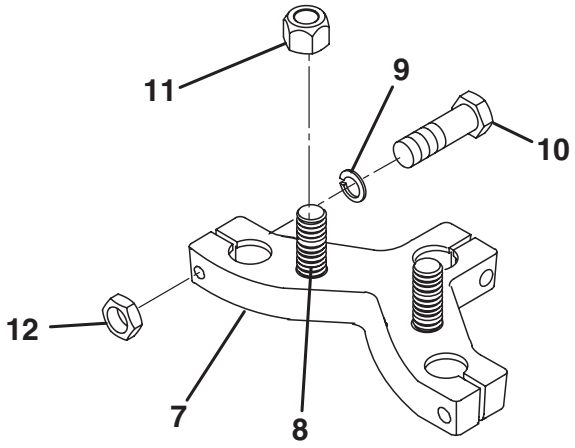
Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4116293.7	1	Bracket, clamp turf guard	
2	548905	4	Screw, flangelock, 3/8-16 x 1”	
3	4116290.7	3	Guard, three finger turf	
4	4116292.7	1	Guard, four finger turf	
5	443110	4	Nut, 3/8-16	
6	453010	6	Washer, 3/8”	
7	524161	2	Keeper, spring-turf guard	
8	837120	2	Spring, turf guard	
9	523100	2	Bushing	
10	524165	2	Rod, spring	
11	603501	2	Pin, spirol, 1/8” x 3/4”	
12	524215	2	Bushing, turf guard	
13	4116294.7	1	Frame, turf guard	
14	460014	5	Pin, cotter, 3/32” x 3/4”	
15	827498	1	Yoke, adjustable end	
16	443112	1	Nut, 3/8-24	
17	461465	1	Pin, clevis, 3/8” x 1 3/32”	
18	540108	1	Link, lift	
19	445796	3	Nut, crownlock, 3/8-16	
20	521679	1	Bushing	
21	400262	1	Screw, 3/8-16 x 1”	
22	808959	2	Spacer	
23	809242	2	Retainer	
24	809174	2	Washer, 3/8”	
25	823765	4	Mount, rubber	
26	400272	2	Screw, 3/8-16 x 2 1/4”	

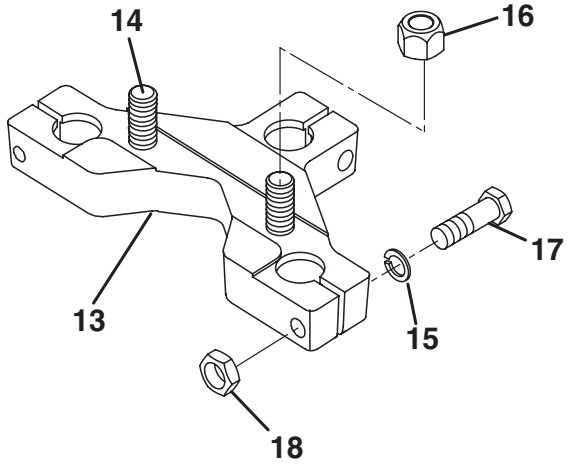
> Change from previous revision

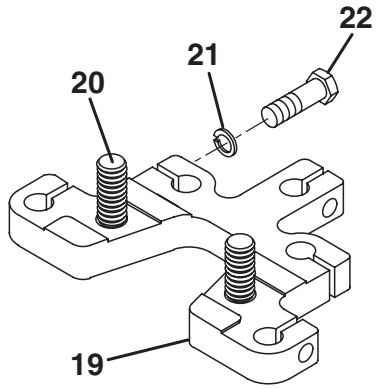
32.1 Tine Holders

Serial No. All







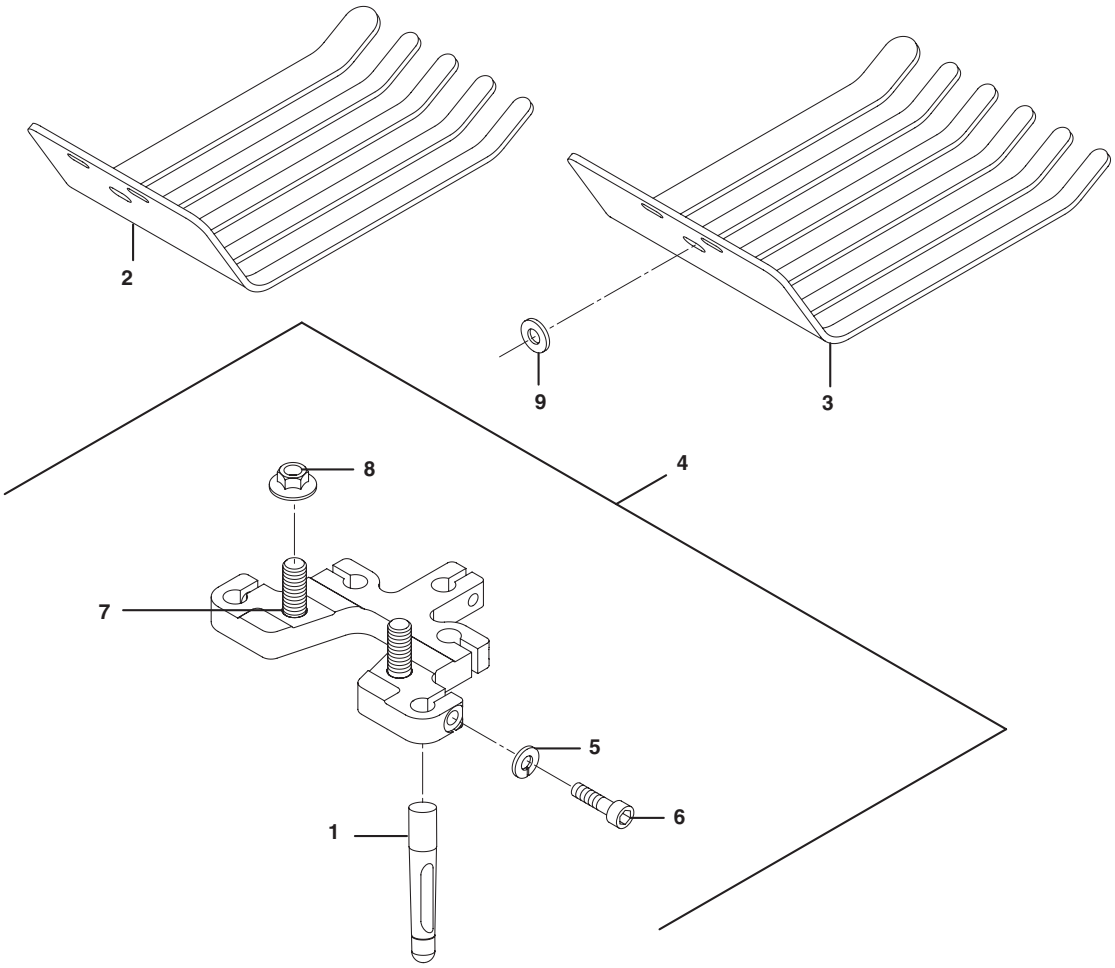


Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	4116625.7	1	Tine holder, 3/4” (19mm),	Supplied Standard,7/8” OD tines
2	523474	2	• Screw, 1/2-20 x 1/ 13/16”, grade 8	
3	800446	3	• Nut, stop, 5/16-24	
4	400232	3	• Screw, 5/16-24 x 1 3/4”, grade 8	
5	800559	2	• Nut, Crown lock, 1/2-20	
6	446134	3	• Lock washer, 5/16	
7	4116255.7	1	Tine holder, 5/8” (15.9mm),	3/4” OD tines
8	523474	2	• Screw, 1/2-20 x 1/ 13/16”, grade 8	
9	446134	3	• Lock washer 5/16”	
10	400190	3	• Screw, 5/16-18 x 1 1/4”	
11	800559	2	• Nut, Crown lock, 1/2-20	
12	800446	3	• Nut, stop, 5/16-18	
13	4117122.7	1	Tine holder, 1/4”-3/8”-1/2”,	5/8” OD tines
14	523474	2	• Screw, 1/2-20 x 1/ 13/16”, grade 8	
15	446134	3	• Lock washer 5/16”	
16	800559	3	• Nut, crown lock, 1/2-20	
17	400190	3	• Screw, 5/16-18 x 1 1/4”	
18	800446	3	• Nut, stop, 5/16-20	
19	4116982.7	1	Quint tine holder,	1/2” OD tines
20	523474	2	• Screw, 1/2-20 x 1/ 13/16”, grade 8	
21	446134	5	• Lock washer 5/16”	
22	400188	5	• Screw, 5/16-18 x 1”	

> Change from previous revision

33.1 Accesory Quint Coring Tine

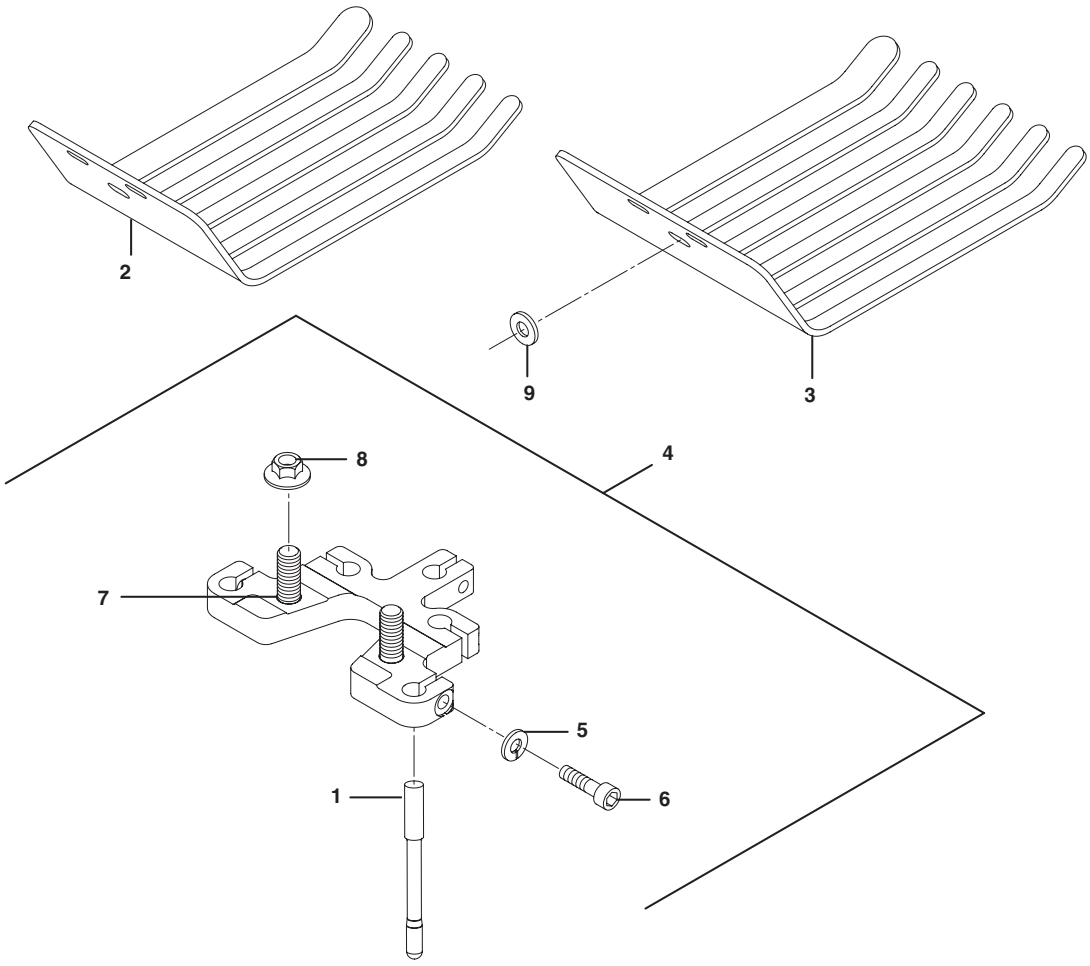
Serial No. All



Item	Part No.	Qty.	Description	Serial Numbers/Notes
	4116992	1	Quint Tine Accessory (coring tine)	
1	523864	20	• Tine, 1/4” coring	
2	4117003.7	3	• Turf guard, 5 finger	
3	4117005.7	1	• Turf guard, 6 finger	
4	4116982.7	4	• Tine holder, quint	
5	446134	5	• • Lockwasher, 5/16”	
6	400188	5	• • Screw, 5/16-18 x 1”	
7	523474	2	• • Screw, 1/2-20 x 1 13/16”	Grade 8
8	800559	2	• • Nut, crownlock, 1/2-20	
9	809183	4	• Washer, 1/4”	

> Change from previous revision

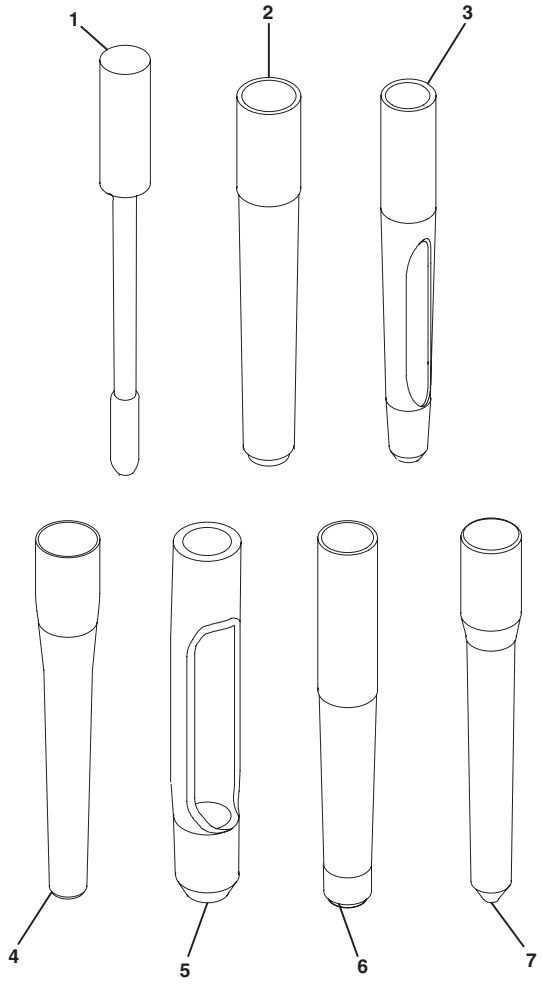
34.1 Accesory Quint Solid Tine



Item	Part No.	Qty.	Description	Serial Numbers/Notes
	4116978	1	Quint Tine Accessory (solid tine)	
1	523863	20	• Tine, 1/4” solid	
2	4117003.7	3	• Turf guard, 5 finger	
3	4117005.7	1	• Turf guard, 6 finger	
4	4116982.7	4	• Tine holder, quint	
5	446134	5	• • Lockwasher, 5/16”	
6	400188	5	• • Screw, 5/16-18 x 1”	
7	523474	2	• • Screw, 1/2-20 x 1 13/16”	Grade 8
8	800559	2	• • Nut, crownlock, 1/2-20	
9	809183	4	• Washer, 1/4”	

> Change from previous revision

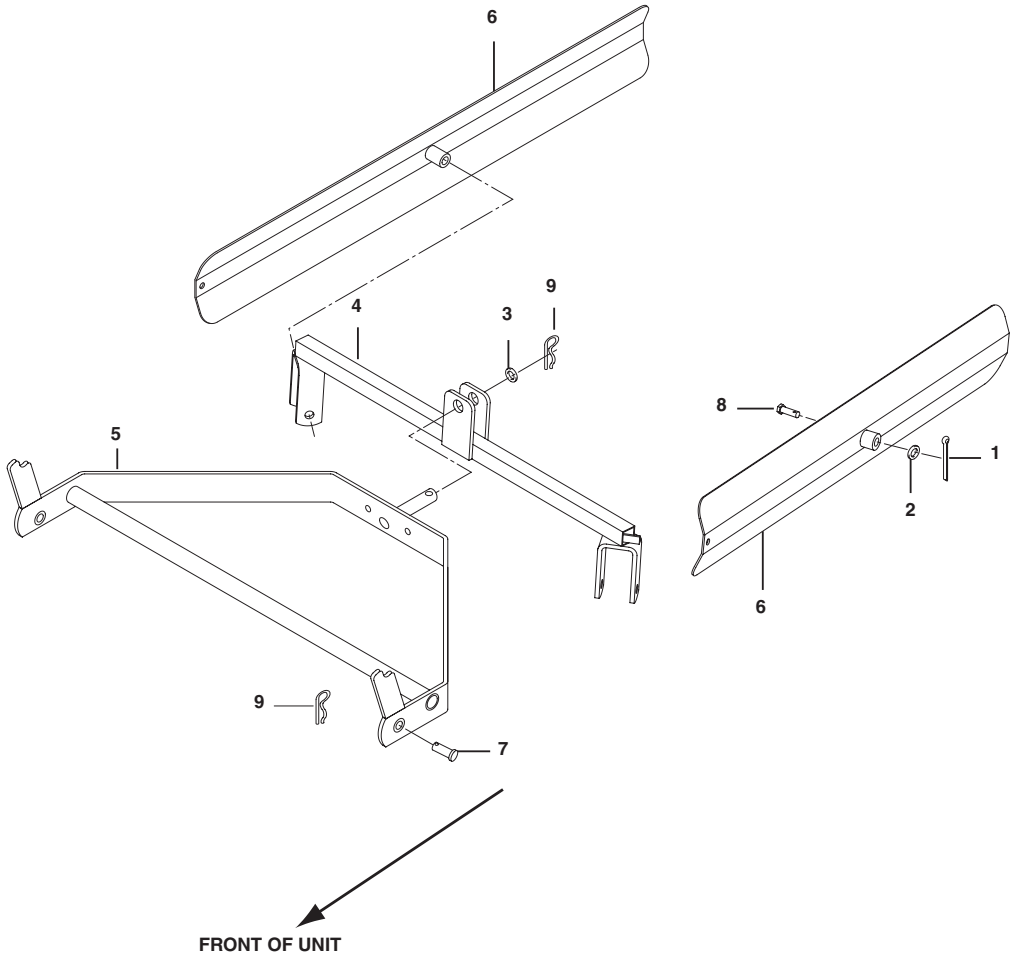
35.1 Tines



Item	Part No.	Qty.	Description	Serial Numbers/Notes
1	523863		1/4” Solid tine	1/2” OD
2	523995		1/2” Coring tine (H.D.)	5/8” OD
3	523864		1/4” Coring tine	1/2” OD
4	523421		3/8” Coring tine	3/4” OD
5	834973		3/4” Coring tine, Open inside	7/8” OD
6	523394		5/8” Coring tine	3/4” OD
7	838323		1/2” Solid tine	3/4” OD
	517486		1/4” Coring tine	5/8” OD, Not Shown
	517487		3/8” Coring tine	5/8” OD, Not Shown
	517488		1/2” Coring tine	5/8” OD, Not Shown
	523472		1/2” Coring tine	3/4” OD, Not Shown
	547132		1/2” Coring tine, Carbide Tip	5/8” OD, Not Shown
	517489		5/8” Coring tine	3/4” OD, Not Shown
	523028		5/8” Coring tine	3/4” OD, Not Shown
	523273		3/4” Coring tine	3/4”OD, Not Shown

> Change from previous revision

36.1 Accessory Windrow Attachment



Item	Part No.	Qty.	Description	Serial Numbers/Notes
	4116980	1	Accessory Windrow Attachment	
1	460030	2	Pin, cotter, 1/8” x 1 1/8”	
2	453017	2	Washer, 1/2”	
3	309488	1	Washer, 5/8”	
4	4117006.7	1	Crossmember	
5	4117007.7	1	Arm	
6	4117008.7	2	Blade, windrow	
7	548458	2	Pin, clevis, 1/2” x 1 1/4”	
8	548462	2	Pin, clevis, 1/2” x 2 3/4”	
9	460316	3	Hairpin, 25/32” x 2.69”	

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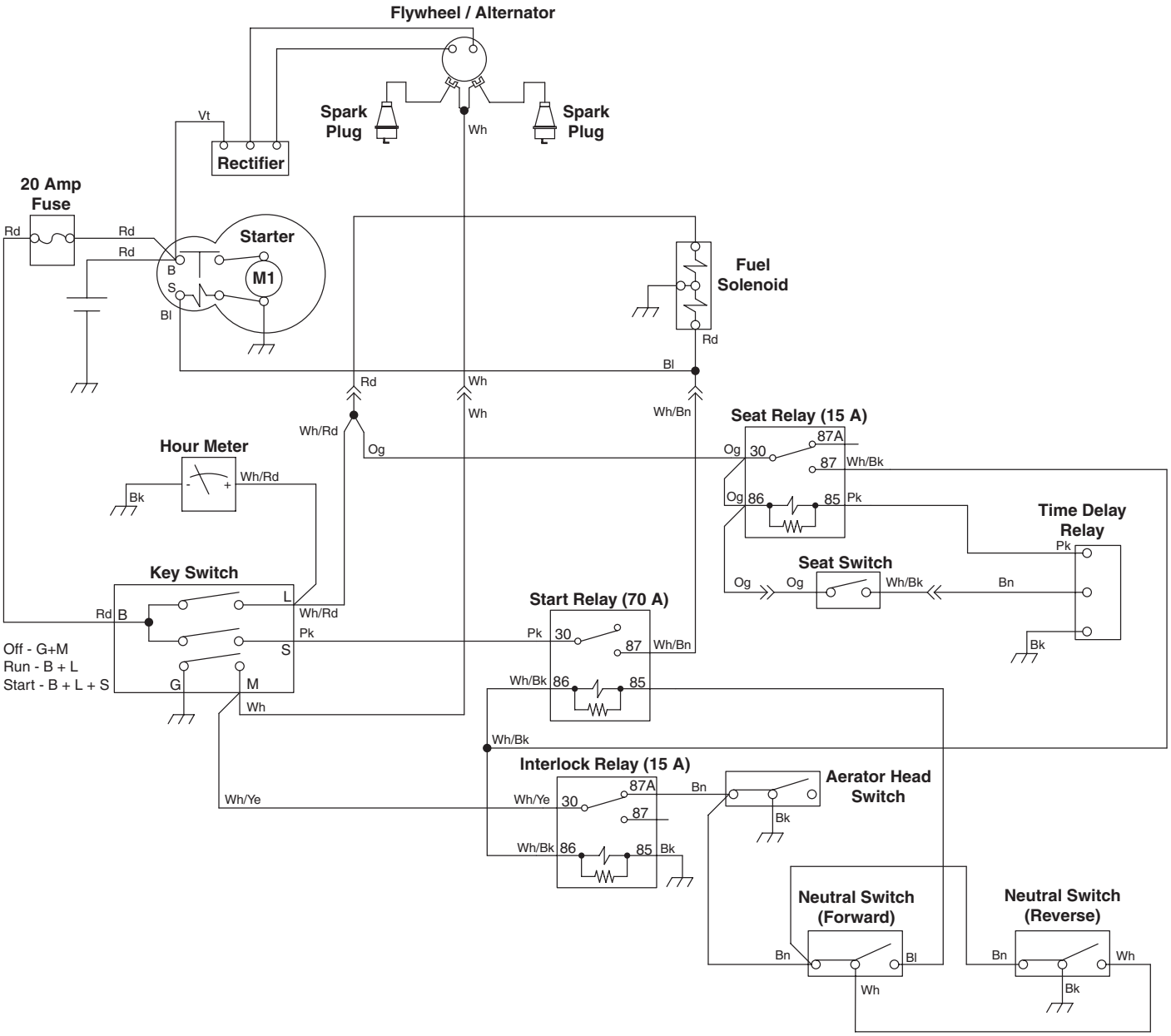
37.1 Wiring Diagram

Serial No. All



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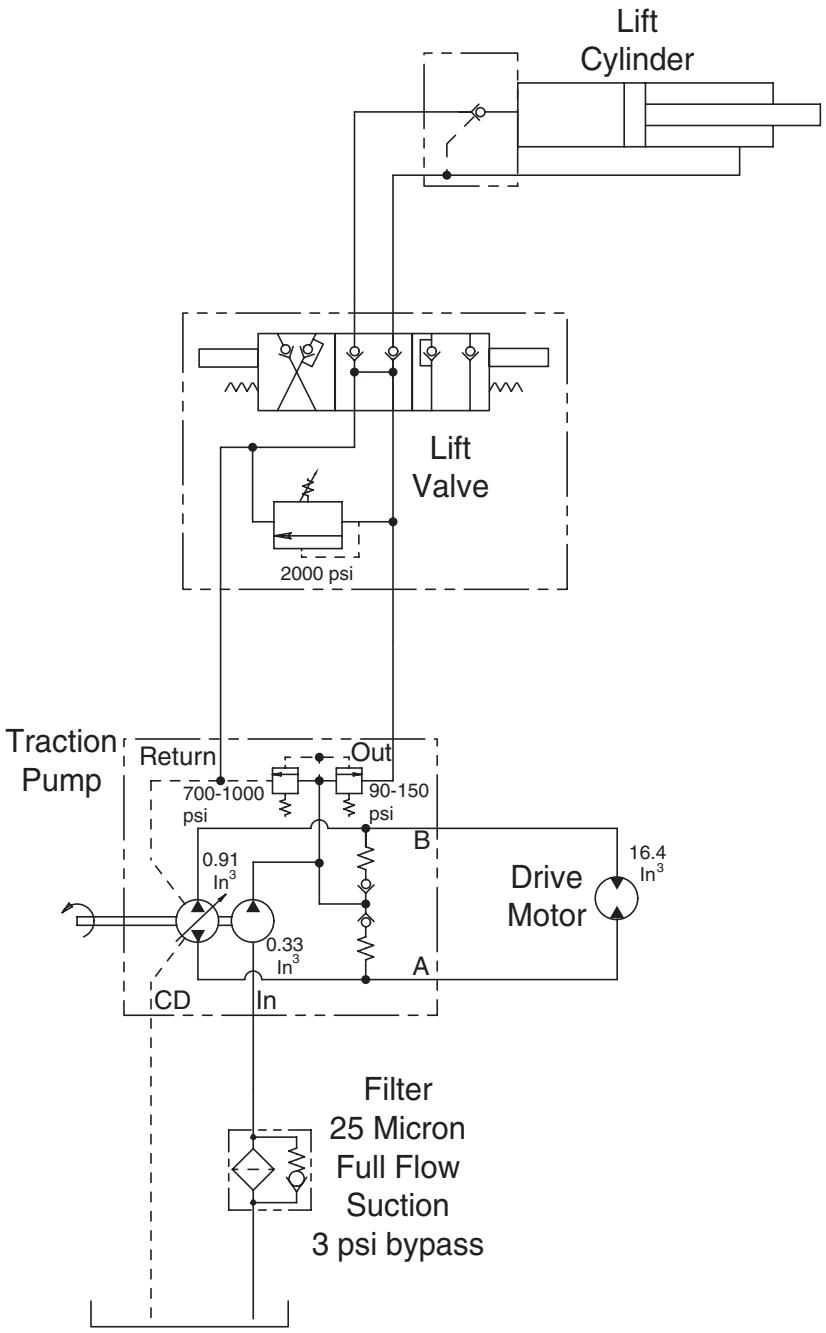
38.1 Hydraulic Diagram



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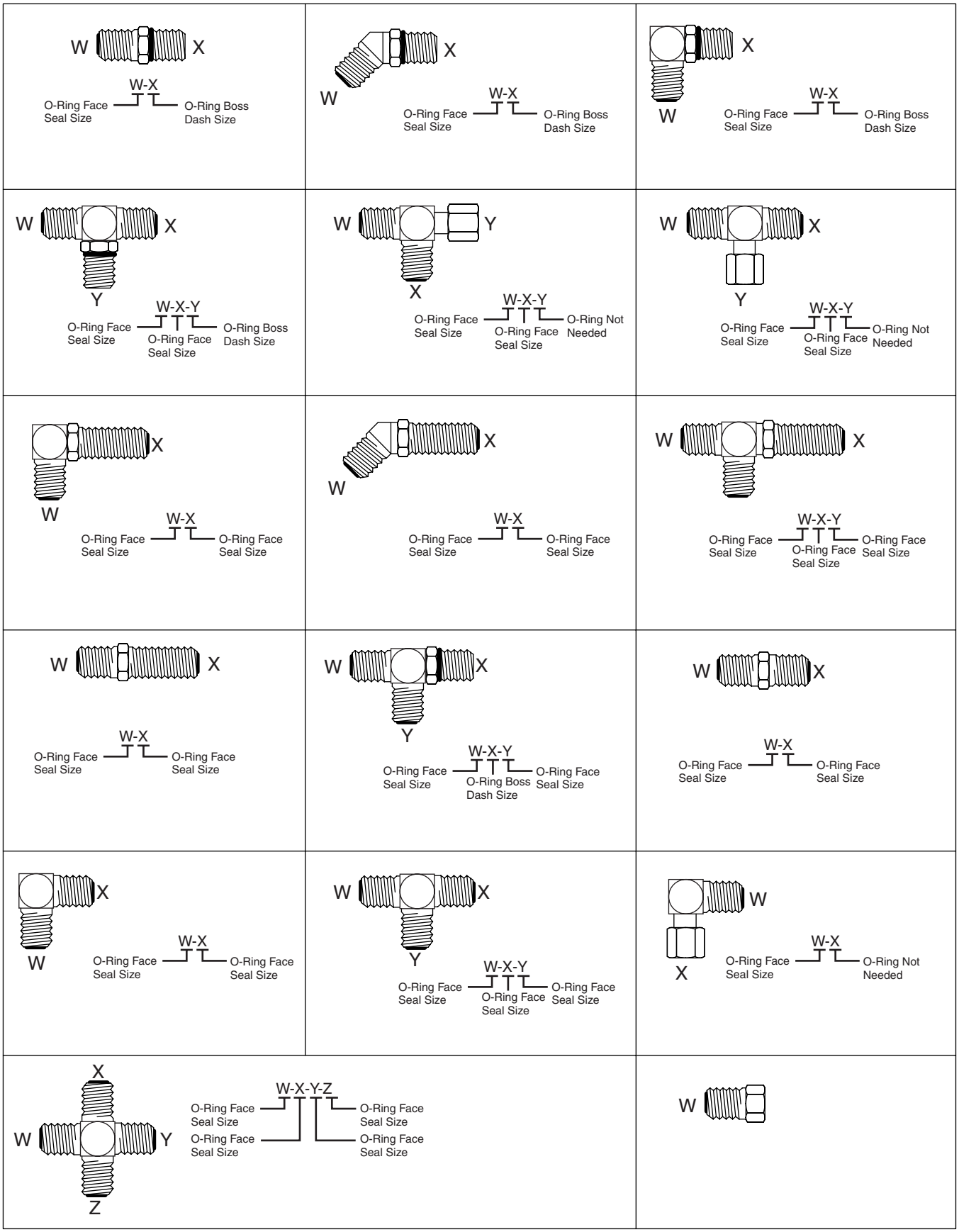
39.1 O-Ring Chart

Serial No. All



Adapter Part Number.	Dash Size	Adapter Type	(W) O-Ring	(X) O-Ring	(Y) O-Ring	(Z) O-Ring
339972	4-4	Straight Adapter	339908	339896		
339974	4-6	Straight Adapter	339908	339897		
339979	6-6	Straight Adapter	339909	339897		
339984	8-8	Straight Adapter	339910	339898		
339985	8-10	Straight Adapter	339910	339899		
339988	10-8	Straight Adapter	339911	339898		
339989	10-10	Straight Adapter	339911	339899		
339990	10-12	Straight Adapter	339911	339900		
340057	4-6	90° Adapter	339908	339897		
340062	6-8	90° Adapter	339909	339898		
340066	8-8	90° Adapter	339910	339898		
340070	10-10	90° Adapter	339911	339899		
340119	6-6-6	Swivel Run Tee	339909	339909		
340120	8-8-8	Swivel Run Tee	339910	339910		
340143	6-6-6	Swivel Branch Tee	339909	339909		
340167	6-6	90° Bulkhead Adapter	339909	339909		
340215	6-6-6	Bulkhead Run Tee	339909	339909	339909	
340239	6-6	Union Bulkhead Adapter	339909	339909		
340240	8-8	Union Bulkhead Adapter	339910	339910		
340289	8-6	Union Adapter	339910	339909		
340337	10-10-10	Union Tee	339911	339911	339911	

SAE Boss O-Rings			ORS Face Seal O-Rings		
Dash Size	Thread Size	O-Ring	Tube Size	Thread Size	O-Ring
2	5/16-24	459290	4	9/16-18	339908
3	3/8-24	459291	6	11/16-16	339909
4	7/16-20	339896	8	13/16-16	339910
5	1/2-20	459293	10	1-14	339911
6	9/16-18	339897	12	1 3/16-12	339912
8	3/4-16	339898	16	1 7/16-12	339913
10	7/8-14	339899	20	1 11/16-12	339914
12	1 1/16-12	339900	24	2-12	339915
14	1 3/16-12	459296			
16	1 5/16-12	339901			
20	1 5/8-12	339902			
24	1 7/8-12	339903			
32	2 1/2-12	339904			

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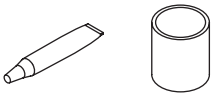
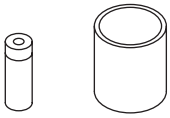
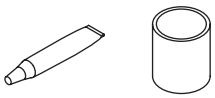
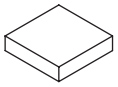
009034770.....35
009034910.....35
009034920.....35
009039290.....35
128010.....57
158135-01 57
2000576.....33, 37
2700867.....57
2702168.....49, 73
316946.....83
320107.....69
360346.....55
385174.....54
4115182.....35
4116250.7.....85
4116255.7.....77, 89
4116256.7.....83
4116257.7.....59
4116287.7.....53
4116289.7.....53
4116290.7.....87
4116292.7.....87
4116293.7.....87
4116294.7.....87
4116297.7.....37
4116298.7.....37
4116299.7.....37
4116300.7.....37
4116424.....53
4116425.....53
4116481.7.....81
4116482.7.....81
4116498.7.....79
4116503.7.....79
4116516.7.....83
4116518.7.....83
4116519.7.....83
4116547.....38
4116548.....38
4116549.6.....38
4116550.6.....37
4116551.6.....37
4116552.6.....37
4116624.7.....77
4116625.7.....89
4116647.7.....79
4116790.....79
4116791.....79
4116806.....81
4116807.....81
4116860.7.....81
4116865.....37
4116978.....91
4116980.....93
4116982.7..... 89, 90, 91
4116992.....90
4117003.7..... 90, 91
4117005.7..... 90, 91
4117006.....93
4117007.....93
4117008.....93
4117122.7.....89
4124713..... 37, 38
4124812.....37
4124956.....57
416453.....39
461453.....53
463009..... 59, 61
463017.....65
463029.....73
463040.....85
515390..... 43, 47, 81
515511.....67
516793.....51
517486.....92
517487.....92
517488.....92
517489.....92
520528..... 49, 59, 63
520856.....81
521679.....87
521680.....65
522009.....45
522113.....71
522123..... 47, 79
522576.....49
522581.....49
522583.....49
522649.....49
522723.....81
522747.....85
522807.....85
522836..... 77, 79
522837.....79
522838.....79
522839..... 77, 79
522840..... 61, 79
522841.....79
522847.....79
522856.....49
522857.....77
522858..... 77, 85
522879..... 33, 35
522887.....81
522889.....81
522899.....59
522912.....45
522952.....77
522962..... 59, 63
522964.....71
522969..... 59, 63
522970..... 59, 63
522972..... 71
522973..... 67
522991..... 85
522992..... 85
522993..... 51
523028..... 92
523037..... 73
523038..... 73
523049..... 73
523052..... 41
523054..... 37
523073..... 45
523075..... 45
523077..... 53
523078..... 53
523085..... 53
523088..... 41
523096..... 67
523098..... 69
523100..... 43, 81, 87
523104..... 85
523112..... 71
523115..... 75
523126..... 83
523127..... 79
523159..... 71
523167..... 53
523169..... 45
523171..... 45
523172..... 53
523176..... 41
523184..... 79, 81
523185..... 47, 79
523197..... 45
523200..... 51
523202..... 51
523203..... 51
523211..... 51
523212..... 37
523215..... 81
523222..... 77
523223..... 45
523224..... 43, 51, 81
523234..... 79
523239..... 65
523240..... 85
523248..... 79
523253..... 75
523273..... 92
523282..... 65
523297..... 77
523304..... 49
523316..... 65
523317..... 65
523323..... 65
523345..... 71
523346..... 83
523348..... 83
523349..... 83
523356..... 53
523357..... 53
523381..... 67
523394..... 92
523410..... 75
523411..... 73
523412..... 73
523415..... 75
523416..... 71
523419..... 75
523421..... 92
523424..... 67
523426..... 43
523431..... 83
523472..... 92
523473..... 75
523476..... 33, 53
523492..... 75
523497..... 75
523654..... 39
523736..... 41
523768..... 71
523863..... 92
523864..... 90, 91, 92
523995..... 92
524083..... 73
524145..... 37, 47
524148..... 49
524149..... 49
524150..... 49
524151..... 49
524153..... 49
524155..... 49
524159..... 51
524160..... 73
524161..... 87
524163..... 37, 47
524164..... 71
524165..... 87
524166..... 43
524167..... 43
524169..... 43
524170..... 43
524205..... 71
524208..... 37
524215..... 87
524221..... 71
524281..... 33
524302..... 71
524392..... 33
524452..... 37
524471..... 73
524602..... 71

524612 39
524635 65
524676 65
524686 ..... 35, 53
524688 ..... 35, 39, 45
524690 ..... 33, 35, 41
524701 61
524708 53
524709 65
524710 65
524716 59
524720 43
524721 ..... 43, 57
524723 65
524725 33
524727 ..... 33, 81
524728 ..... 33, 43, 53, 79
524729 ..... 33, 79
524730 ..... 33, 43, 81
524731 ..... 33, 35, 45
524733 ..... 33, 38
524736 45
524738 ..... 35, 43, 53, 79
524741 ..... 35, 43, 81
524742 ..... 35, 79
524743 81
524772 65
524802 ..... 45, 65
524811 ..... 47, 71
539021 73
539023 61
539024 61
540036 43
540039 51
540040 49
540043 47
540045 ..... 47, 49
540046 49
540108 87
540112 71
540151 81
540307 57
540327 45
540334 59
540335 ..... 59, 61
540341 37
540375 65
540398 71
540400 71
545786 81
545801 71
547132 92
547547 65
547560 ..... 59, 63
547566 51
547574 41
547581 47
547596 ..... 43, 81
547597 69
547606 53
547610 41
547612 51
547613 51
547614 ..... 45, 75
547617 69
547670 67
547672 ..... 59, 63
547674 ..... 71, 73
547680 73
547703 67
547731 ..... 71, 73
547738 75
547782 63
547783 55
547807 81
547818 71
547881 41
547882 55
547886 79
547887 47
548325 79
548355 79
548359 65
548365 47
548458 93
548462 93
603501 87
700263 65
724743 35
800113 71
800227 71
800390 37
800519 85
800920 65
805376 43
805408 53
805860 54
806953 56
807439 67
808088 54
808930 67
808959 87
809229 54
809242 87
809268 54
814483 49
814924 ..... 57, 59, 71
815093 85
815474 55
815847 56
816320 54
816401 53
816447 63
816452 63
816455 63
816456 63
816659 63
816660 63
817598 75
817613 51
818303 56
818962 65
819337 39
821814 69
821893 37
823118 71
823332 ..... 43, 51
823549 77
823587 71
823765 87
824438 ..... 37, 47
825884 69
825922 38
826558 71
827316 75
827320 75
827498 ..... 51, 75, 87
827821 41
828056 71
828057 71
828247 59
829148 53
829270 67
829726 ..... 37, 45
829754 ..... 43, 57
829997 61
830139 75
830167 63
830168 63
830369 63
830370 63
830425 69
830784 53
830815 41
831024 85
831096 79
831306 69
831518 ..... 41, 73
831586 75
832498 ..... 77, 79
832499 ..... 59, 61, 79, 83
832555 63
833790 69
834973 92
835104 47
835105 47
835892 37
836206 71
836621 54
837120 87
837322 ..... 33, 35
837753 71
838323 92
838367 ..... 33, 35, 45
839862 61
840748 ..... 35, 38
840877 71
841528 57
841895 57
842037 65
842094 49
842432 ..... 33, 53
842502 65
842504 69
842509 65
842513 65
842517 65
843167 57
869034 71
883078 57
884599 ..... 39, 71
884681 ..... 39, 71
886735 55
886802 ..... 45, 57
886883 63
887687 57
888102 ..... 37, 81
889115 79
889447 77
889843 54
889844 54
889845 54
889878 55
890543 79
892228 61
892486 61
894177 37
9034920 37
A903493 35

Hydraulic Fluid*		
5001405	Two 2-1/2 Gallon Container of ISO VG68 Oil	
5001404	One 5 Gallon Pail of ISO VG68 Oil	
2500548	Two 2-1/2 Gallon Container of 10W30 Oil	
2500546	One 5 Gallon Pail of 10W30 Oil	
503409	Two 2-1/2 Gallon Container of ATF Fluid	
503407	One 5 Gallon Pail of ATF Fluid	
2-Cycle Oil		
554600	Twenty Four 16 Ounce Plastic Container	
554599	Twenty Four 8 Ounce Plastic Container	
Grease		
5000067	One 5 Gallon Pail OO-Grease	
5000068	Twenty Four 8 Ounce Tube OO-Grease	
Paint		
5003469	16 Ounce Gray Aerosol	
554598	Six 12 Ounce Orange Aerosol	
2500789	Twelve 1 Quart Can Orange	
546409	Two 1 Gallon Can Orange	
Lapping Compound		
5002488	One 10 Pound Pail of 80 Grit	
5002490	One 25 Pound Pail of 80 Grit	
5002489	One 10 Pound Pail of 120 Grit	
5002491	One 25 Pound Pail of 120 Grit	
Specialty Compound		
365422	5.3 Ounce Tube of Electrical Insulating Gel	
5001581	14 Ounce Can of Lubriplate Multi Lube A	
Biodegradable Hydraulic Fluid*		
5003102	One 55 Gallon Drum TGTSP GreensCare 68	
5003103	One 5 Gallon Pail TGTSP GreensCare 68	
5003105	One 55 Gallon Drum TGTSP GreensCare 46	
5003104	One 5 Gallon Pail TGTSP GreensCare 46	
4115976	One 55 Gallon Drum TGTSP GreensCare 32	
4115977	One 5 Gallon Pail TGTSP Greens Care 32	
5003106	Twenty Four 14 Ounce Tube Greens Care Grease	
O-Ring Kit		
5002452	SAE O-Ring Boss (3/32 ~ 2" Tube O.D.)	
5002453	Common O-Ring Kit	
5002454	O-Ring Face Seal ORFS (-4 ~ -24 ORS Tube Size)	
Right Start Kit for New Machines		
See your local TGTSP Dealer		
On-Time Maintenance Kit		
See your local TGTSP Dealer		

* Refer to the Parts & Maintenance manual for the correct hydraulic oil requirements for your machine.

Textron Golf, Turf & Specialty Products offers a High Usage Parts Catalog illustrating commonly used Parts through easy to read line Drawings. See your local TGTSP Dealer for a copy.

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Equipment from Jacobsen is built to exacting standards ensured by ISO 9001 and ISO 14001 registration at all of our manufacturing locations.

A worldwide dealer network and factory trained technicians backed by Textron Parts Xpress provide reliable, high-quality product support.

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